TD 8.8/2:
989

PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 18)

A proposal to amend § 371.21 of Part 371, Initial Federal Motor Vehicle Safety Standards, by adding Standard No. 109, New Pneumatic Tires—Passenger Cars; and Standard No. 110, Tire Selection and Rims—Passenger Cars; was published in the *Federal Register* on July 22, 1967 (32 F.R. 10812).

Interested persons have been afforded an opportunity to participate in the making of the amendment.

Compliance with the labeling requirements of Standard No. 109, established in accordance with section 201 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1421), and the tread wear indicator requirements found in the standard may necessitate the modification of tire molds. Several tire manufacturers requested that additional time be allowed to modify these tire molds. After evaluation of all data received, it was determined that an effective date of August 1, 1968, for paragraphs S4.2.1 and S4.3 would provide a reasonable amount of time to accomplish the necessary mold modifications.

Many comments stated that no practical way is known to permanently affix a label onto the tire sidewall, as would have been required by proposed paragraph S4.3.1 until such time as a label is molded into or onto the tire. Accordingly, S4.3.1 of Standard No. 109 has been modified to permit, until August 1, 1968, the use of a label or tag containing the required labeling information not permanently molded into or onto the tire.

Many comments objected to the limitations imposed by the maximum tire section width dimensions specified in the tables of the notice. The Administrator has determined that additional dimensional latitude is necessary, and therefore Standard No. 109 specifies that to provide for tire growth, protective side ribs, ornamentation, manufacturing tolerances, and design differences for each tire size designation, actual tire section width and overall tire width may exceed the section width specified in Table I of the Standard by 7 percent.

In response to requests, additional tire size designations and load/inflation schedules were added when necessary information was available. In addition, Table I of Standard No. 109 and Table II of Standard No. 110 have been combined to collate related information.

Persons desiring an amendment to Standard No. 109 adding tires not presently listed, should submit sufficient pertinent information relative to these tires in 10 copies to the Secretary of Transportation; Attention: Motor Vehicle Safety Performance Service, National Highway Safety Bureau, Federal Highway Administration, U.S. Department of Transportation, Washington, D.C. 20591.

Data received have shown that the rim references indicated in the proposed Standards were inadequate in coverage. Therefore, a more comprehensive list of foreign and domestic trade association publications containing appropriate rim standards or practices has been referenced in the Standards.

Data received demonstrated that the bead unseating and tire strength requirements were inappropriate for certain groups of small tires. Accordingly, tires were regrouped and the test values revised to provide requirements for these small tires that are proportional to the requirements for other sizes of tires.

Although Standard No. 109 applies to tires for use on passenger cars manufactured after 1948, some of the tires covered by the Standard may also be used on earlier model vehicles.

The testing procedures set forth in the Standard, size designations, and related data are based upon existing standards or practices using information furnished by such organizations as the Society of Automotive Engineers, Federal Trade Commission, Tire and Rim Association, European Tire and Rim Technical Organization, Japanese Standards Association, Japan Automobile Tire Manufacturers Association, Rubber Manufacturers Association, Tyre Manufacturers Conference, Ltd., and the Society of Motor Manufacturers and Traders, Ltd.

To permit production of sufficient quantities of tires complying with the requirements of Standard No. 109 after its effective date of January 1, 1968, Standard No. 110 applies to passenger cars manufactured on or after April 1, 1968.

A single table of load/pressure values for radial ply tires was included in the notice and this was supported by many comments. Other comments stressed the importance of including different load/pressure values for optimum tire deflections. Although a single table of load/pressure schedules combining these values for these radial ply tires would be desirable, it was not considered advisable to include such a table in the standard promulgated under the present notice.

In accordance with section 201 of the Act, S4.3 of Standard No. 109 requires that each tire be labeled with the name of the manufacturer or his brand name and an approved code mark to permit the tire seller to identify the tire manufacturer upon the purchaser's request. Any tire manufacturer desiring an approved code mark should apply for his code number assignment to the Secretary of Transportation; Attention: Motor Vehicle Safety Performance Service, National Highway Safety Bureau, Federal Highway Administration, U.S. Department of Transportation, Washington, D.C. 20591.

Several comments, including the suggested use of a "load range" system, will be considered for future rulemaking. (See 32 F.R. 14279).

Since it was clearly the intent of the Congress that, to enhance the safety of the general public, Federal Motor Vehicle Safety Standards for tires become effective as soon as practicable, and since no adverse comments were received pertinent to the proposed effective date presented in the advance notice of proposed rulemaking (32 F.R. 2417), at a Government-industry technical meeting, and in the notice of proposed rulemaking (32 F.R. 10812), and no undue burden was demonstrated, good cause is shown that an effective date earlier than 180 days after issuance is in the public interest.

In consideration of the foregoing, § 371.21 of Part 371, Initial Federal Motor Vehicle Safety Standards, is amended . . . . Standard No. 109 becomes effective January 1, 1968, and Standard No. 110 becomes effective April 1, 1968.

(Secs 103, 119, National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407); delegation of authority of Mar. 31, 1967 (32 F.R. 5606), as amended Apr. 6, 1967 (32 F.R. 6495), July 27, 1967 (32 F.R. 11276), Oct. 11, 1967 (32 F.R. 14277), Nov. 8, 1967).

Issued in Washington, D.C., on November 8, 1967.

Lowell K. Bridwell,
Federal Highway Administrator.

32 F.R. 15792
November 16, 1967

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 18)

Motor Vehicle Safety Standard No. 109 (32 F.R. 15792) specifies tire dimensions and laboratory test requirements for bead unseating resistance, strength, endurance, and high speed performance; defines tire load ratings; and specifies labeling requirements for new pneumatic tires for use on passenger cars manufactured after 1948.

Certain labeling requirements are set forth in S4.3, including, in paragraph (i), a requirement for an approved recital (or the symbol specified in Figure 1) that the tire conforms to applicable Federal Motor Vehicle Safety Standards. Figure 1 contains lettering detail dimensions for that symbol.

The Federal Highway Administration has determined that it is not necessary to specify the width and stroke of individual letters nor the space between letters if the overall length and height is specified, and that more latitude is needed in the depth and overall length requirements for this symbol. Therefore, Standard No. 109 is being amended by striking out the unneeded dimensions and by providing increased latitude for the letter depth and the overall length requirements.

Since this amendment provides an alternative means of compliance, relieves a restriction, and imposes no additional burden on any person, notice and public procedure hereon are unnecessary and good cause is shown that an effective date earlier than 180 days after issuance is in the public interest and the amendment may be made effective less than 30 days after publication in the *Federal Register*.

In consideration of the foregoing, § 371.21 of Part 371, Initial Federal Motor Vehicle Safety Standards, Standard No. 109 is amended by deleting Figure 1 (32 F.R. 15794) and in its place inserting the following Figure 1.

(Secs. 103, 119, National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407); delegation of authority of Mar. 31, 1967 (32 F.R. 6506), as amended Apr. 6, 1967 (32 F.R. 6495), July 27, 1967 (32 F.R. 11276), Oct. 11, 1967 (32 F.R. 14277), and Nov. 8, 1967 (32 F.R. 15710))

This amendment becomes effective January 1, 1968.

Issued in Washington, D.C., on December 11, 1967.

Lowell K. Bridwell,
Federal Highway Administrator.

33 F.R. 17938
December 15, 1967

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 18R)

Motor Vehicle Safety Standard No. 109 (32 F.R. 15792), as amended (32 F.R. 17938), specifies tire dimensions and laboratory test requirements for bead unseating resistance, strength, endurance, and high speed performanace; defines tire load ratings; and specifies labeling requirements for new pneumatic tires for use on passenger cars manufactured after 1948. Motor Vehicle Safety Standard No. 110 (32 F.R. 15798) specifies tire selection and rims requirements to prevent tire overloading.

Figures 2 and 3 of Standard No. 109 are drawings of the bead unseating test fixture used in performing the test specified in S5.2.

Section S5.4.2.3 specifies the 50 miles-per-hour test schedule for the tire endurance test.

Tables I–A through I–H list the various tire types and sizes with proper load and inflation values.

After review of Petitions for Reconsideration received under Docket No. 18R, the Administrator has determined that certain parts of Standard No. 109 require clarification, the tire tables need revision to include a number of new sizes and there is need for a table listing a new series of tires.

In addition, Standard No. 110 requires an additional table to list alternative rims for tire and rim combinations not presently covered by the standard.

Therefore, Standard No. 109 is being amended by—

(a) Revising Figures 2 and 3, which depict the bead unseating test fixture, by adding one additional dimension to Figure 2 and a centerline and tangent line to Figure 3;

(b) Specifying that the test required by S5.4.2.3 be conducted without pressure adjustment or other interruption;

(c) In table I–A through I–H

(1) Adding additional tire size designations;

(2) Adding footnotes permitting the use of the letter "H", "S", or "V";

(3) Correcting typographical errors;

(d) Adding Table I–J which lists a new series of low section height tires.

In addition, Standard No. 110 is being amended by—

(a) Revising paragraph S4.4.1 to include alternative rims, not presently listed in the references cited in the definition of Test Rim in S3 of Standard No. 109; and

(b) Adding a new table of approved alternative rims.

Since these amendments provide clarification and alternative means of compliance, relieve restrictions, and impose no additional burden on any person, notice and public procedure hereon are unnecessary. The Administrator finds, for good cause shown, that no preparatory period is needed to effect compliance and it is therefore in the public interest to make the amendments effective immediately.

In consideration of the foregoing, § 371.21 of Part 371, Federal Motor Vehicle Safety Standards, Standard No. 109 (32 F.R. 15792), as amended (32 F.R. 17938), and Standard No. 110 (32 F.R. 15798), are amended, effective April 11, 1968 . . . .

(Secs. 103, 119, National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407); delegation of authority of March 31, 1967 (32 F.R. 5606), as amended Nov. 8, 1967 (32 F.R. 15710)).

Issued in Washington, D.C., on April 11, 1968.

Lowell K. Bridwell,
Federal Highway Administrator.

33 F.R. 5944
April 18, 1968

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

On September 11, 1968, the Federal Highway Administration published in the *Federal Register* amendments to Standard Nos. 109 and 110 (33 F.R. 12842). Omitted from publication as part of Appendix A of Standard No. 109 were Tables 1–A through 1–J. For the convenience of persons using the tables the preamble to the amendments published September 11, 1968, and the text of the amendments, as corrected by the addition of the omitted tables are published below. Additionally, Appendix A of Standard No. 110 has been changed to specify the information that should be submitted with requests for the addition of alternative rim sizes.

Federal Motor Vehicle Safety Standard No. 109 (32 F.R. 15792), as amended (32 F.R. 17938 and 33 F.R. 5944), specifies tire dimensions and laboratory test requirements for bead unseating resistance, strength, endurance and high speed performance; defines tire load ratings; and specifies labeling requirements for new pneumatic tires for use on passenger cars manufactured after 1948. Motor Vehicle Safety Standard No. 110 (32 F.R. 15798) as amended (33 F.R. 5949) specifies tire selection and rim requirements to prevent tire overloading.

Tables 1–A through 1–J of Standard No. 109 list various tire types and sizes with proper load and inflation values.

Standard No. 109 is being amended to designate Tables 1–A through 1–J as Appendix A of Standard No. 109.

In addition, Table 1–H is being amended by adding additional tire size designations.

Table I of Standard No. 110 is a list of alternative rims for tire and rim combinations that are not contained in any reference in § 3 of Standard No. 109.

Standard No. 110 is being amended to designate Table I as Appendix A of Standard No. 110.

In addition, the table is being amended by adding, as alternative rims for tire size 8.55x15, rim sizes 5½–JK, 5½–JJ, 5½–J; F70–14, rim size 7JJ; and G70–14, rim size 7JJ.

Additionally, guidelines by which persons requesting routine additions to Appendix A of Standard No. 109 and Appendix A of Standard No. 110, are set forth as introductory language to both appendices. The guidelines provide an abbreviated rule making procedure for adding tire sizes to Standard No. 109, whereby the addition becomes effective 30 days from date of publication in the *Federal Register* if no comments are received. If comments objecting to the amendment warrant, the Administration will provide for additional rule making pursuant to the Rule Making Procedures for Motor Vehicle Safety Standards (23 C.F.R. 216).

Since these amendments provide an alternative means of compliance, relieve restrictions, and impose no additional burdens on any person, notice and public procedure hereon are unnecessary and the Administrator finds, for good cause shown, that no preparatory period is needed to effect compliance and it is in the public interest to make the amendments effective immediately.

In consideration of the foregoing, Section 371.21 of Part 371, Federal Motor Vehicle Safety Standards, Standard No. 109 (32 F.R. 15792), as amended (32 F.R. 17938 and 33 F.R. 5944), and Standard No. 110 (32 F.R. 15798), as amended (33 F.R. 5949), are amended effective this date as set forth below.

These amendments are made under the authority of Sections 103 and 119 of the National

Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation from the Secretary of Transportation, Part I of the Regulations of the Office of the Secretary (49 C.F.R. § 1.4(c)).

Issued in Washington, D.C., on September 27, 1968.

John R. Jamieson, Deputy
Federal Highway Administrator

33 F.R. 14964
October 5, 1968

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 69–4; Notice No. 1)

On October 5, 1968, the Federal Highway Administration published guidelines in the *Federal Register* (33 F.R. 14964) by which routine additions could be added to Appendix A of Standard No. 109 and the Appendix A of Standard No. 110. These guidelines provided an abbreviated rule-making procedure for adding tire sizes to Standard No. 109 and alternative rim sizes to Standard No. 110, whereby the addition becomes effective 30 days from date of publication in the *Federal Register* if no objections to the proposed additions are received. If comments objecting to the amendment warrant, rule making pursuant to the rule-making procedures for motor vehicle safety standards (49 CFR Part 353) will be followed.

The Rubber Manufacturers Association has petitioned for the addition of the C70–15 tire size designation to Table I–B and the F60–15 tire size designation as a new category of tire to be listed within the tables. The Firestone Tire & Rubber Company has petitioned for the addition of the E50C–16, F50C–16, and H50C–17 tire size designations as a new category of tires.

On the basis of the data submitted by the Rubber Manufacturers Association and the Firestone Tire & Rubber Company indicating compliance with the requirements of Federal Motor Vehicle Safety Standards Nos. 109 and 110 and other information submitted in accordance with the procedural guidelines set forth. Appendix A of Motor Vehicle Safety Standard No. 109 is being amended and Table I of Appendix A of Standard No. 110 is being amended.

In consideration of the foregoing, § 371.21 of Part 371 Federal Motor Vehicle Safety Standards, Appendix A of Standard No. 109 (33 F.R. 14964) and Appendix A of Standard No. 110 (33 F.R. 14969) are amended as set forth below effective 30 days from date of publication in the *Federal Register.*

These amendments are issued under the delegation of authority published October 5, 1968 (33 F.R. 14964) and sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation from the Secretary of Transportation, Part I of the Regulations of the Office of the Secretary (49 CFR 1.4(c)).

Issued on February 3, 1969.

H. M. Jacklin, Jr.
Acting Director
Motor Vehicle Safety
Performance Service
National Highway Safety Bureau

Motor Vehicle Safety Standard No. 109

(1) Table I–B of Appendix A is amended by inserting between the tire size designation L70–14 and D70–15 . . . new tire size C70–15 data.

(2) . . . Tables I–K and I–L are added to Appendix A listing new categories of tire size designations.

34 F.R. 1908
February 8, 1969

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 69–3; Notice No. 1)

The Rubber Manufacturers Association has submitted a petition for rulemaking requesting amendments to Table I–A and Table I–B of Appendix A of Federal Motor Vehicle Safety Standard No. 109—New Pneumatic Tires—Passenger Cars.

The petition requests the following changes:

(1) In Table I–A for tire size designation 8.25–15 the minimum size factor be changed from 37.57 inches to 35.57 inches.

(2) In Table I–B for tire size designation D70–13 the minimum size factor be changed from 32.32 inches to 32.34 inches; for tire size designation D70–14 the minimum size factor be changed from 32.87 inches to 32.81 inches; for tire size designation F70–14 the minimum size factor be changed from 34.18 inches to 34.16 inches; for tire size designation G70–14 the minimum size factor be changed from 35.14 inches to 35.18 inches; for tire size designation J70–14 the minimum size factor be changed from 36.91 inches to 36.87 inches; for tire size designation L70–14 the minimum size factor be changed from 37.59 to 37.62 and the section width be changed from 9.80 inches to 9.75 inches; for tire size designation D70–15 the minimum size factor be changed from 33.34 inches to 33.37 inches and the section width be changed from 7.75 inches to 7.70 inches; for tire size designation E70–15 the minimum size factor be changed from 34.17 inches to 34.13 inches; for tire size designation F70–15 the minimum size factor be changed from 34.91 inches to 34.89 inches; for tire size designation G70–15 the minimum size factor be changed from 35.68 inches to 35.66 inches; for tire size designation H70–15 the minimum size factor be changed from 36.68 inches to 36.64 inches; for tire size designation J70–15 the minimum size factor be changed from 37.34 inches to 37.36 inches; and for tire size designation K70–15 the minimum size factor be changed from 37.62 inches to 37.66 inches.

RMA states in its petition that the requested changes are either (1) corrections of typographical errors in material submitted earlier by the RMA, upon which the present tables found in Appendix A of Standard No. 1 9 are based; or (2) slight modifications that reflect the most recently calculated data.

The request changes are being made. However, should any comments be received from interested persons objecting to, and giving reasons why the changes should not be made, the amendment will be modified as considered appropriate.

Since, to the extent they are other than corrective, these amendments make only minor technical changes at the request of the affected industry, the Administrator finds that, for good cause, notice of public procedure thereon is impracticable and unnecessary. Interested persons may submit written data, views, or arguments relating to the amendments. Comments should identify the Docket (No. 69–3) and be submitted in an original and three copies to the National Highway Safety Bureau, Rules Docket, Room 512, Federal Highway Administration, Washington, D.C. 20591. All comments submitted will be available for examination by interested persons at the docket room.

In consideration of the foregoing, section 371.21 of Part 371 (formally section 255.21 of Part 255), Tables I–A and I–B of Appendix A of Federal Motor Vehicle Safety Standard No. 109 as amended (33 F.R. 19714) is amended effective March 15, 1969 . . . . (Secs. 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966; (15 U.S.C. 1392, 1407); and the delegation of authority contained in § 1.4(c) of

Part I of the Regulations of the Office of the Secretary (49 CFR 1.4 (c)).

Issued in Washington, D.C. on February 10, 1969.

John R. Jamieson, Deputy
Federal Highway Administrator

34 F.R. 2252
February 15, 1969

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 69–12; Notice No. 2)

A proposal to amend Part 571 (formerly Part 371), Federal Motor Vehicle Safety Standard No. 109, "New Pneumatic Tires—Passenger Cars" was published on July 11, 1969 (34 F.R. 11501), as a notice of proposed rule making to delete the exemption for deep-tread, winter-type tires contained in the high-speed requirements. Interested persons were invited to submit comments to this notice.

Federal Motor Vehicle Safety Standard No. 109 (49 CFR 571.21), as amended (33 F.R. 19711), specifies tire dimensions and laboratory test requirements for bead unseating resistance, strength, endurance and high-speed performance; defines tire load ratings; and specifies labeling requirements for new pneumatic tires for use on passenger cars manufactured after 1948.

Paragraph S5.5.4 of Standard No. 109 specifies that for the high-speed performance aspects of the standard, tires are to be tested at 75 m.p.h. for 30 minutes, 80 m.p.h. for 30 minutes, and (except for deep-tread, winter-types tires) 85 m.p.h. for 30 minutes.

Because, in actual practice, deep-tread, winter-type tires are often required to perform at the same rate of speed as other type passenger car tires it was considered in the public interest to amend S5.5.4 to require the same level of high-speed performance of deep-tread, winter-type tires as other type tires are required to meet.

Several comments, including comments from one association representing new tire manufacturing companies, stated that the deep-tread, winter-type tires had groove depths deeper than conventionally treaded tires and that shoulder temperatures of the tires on the laboratory test wheel operating at 80 m.p.h. are comparable to actual highway speeds in excess of 100 m.p.h. These commentators also indicated that to comply with the proposed amendment, the tread depths and lug configurations for the deep-tread, winter-type tires would have to be redesigned. However, research conducted for the Bureau has indicated that all deep-tread, winter-type tires when properly designed and constructed will conform to the present high-speed requirements for conventionally treaded passenger car tires. In addition, test wheel data submitted show that although the temperature of the crown of the tire of deep-tread, winter-type tires may run higher during the high-speed wheel test the difference in shoulder temperature appears insignificant.

Since deep-tread, winter-type tires must often perform at the same motor vehicle speeds and driving conditions as conventionally treaded tires, it is in the public interest that they meet the same minimum performance levels.

In consideration of the above, Federal Motor Vehicle Safety Standard No. 109 paragraph S5.5.4 is amended ....

This amendment becomes effective January 1, 1971.

Issued on July 8, 1970.

Douglas W. Toms,
Director,
National Highway Safety Bureau

35 F.R. 11241
July 14, 1970

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 70–2; Notice No. 2)

A proposal to amend Federal Motor Vehicle Safety Standard 109, New Pneumatic Tires—Passenger Cars, 49 CFR Part 571, was published on April 22, 1970 (35 F.R. 6440). The purpose of the proposed rule was to prevent the sale of tires that failed to pass the passenger car tire standard Motor Vehicle Safety (Standard No. 109) but were nevertheless being sold for passenger car use. As indicated in the notice of the proposed rule, Bureau investigations disclose that this has been a widespread practice. The use of such tires on passenger cars is considered a safety hazard.

In spite of the notice and press releases on the subject, the Bureau has found that unscrupulous distributors and dealers are continuing to buff off restrictive labeling on the tires and are selling them to unsuspecting members of the public. This amendment is therefore necessary to control the relatively large number of tires being reclassified and to provide a better means of enforcing the regulation against persons who are selling these tires for passenger car use.

The amendment changes the passenger car tire standard to require tires that are not certified by the manufacturer as complying with the passenger car tire standard to be branded with the phrase "Unsafe for Highway Use" and to have a label attached indicating that sale of the tire for passenger car use subjects the person selling the tire to a $1,000 civil penalty. The amendment also requires tire manufacturers to report to the Bureau periodically on the number of these tires sold and the names of distributors or dealers to whom they are sold.

Interested persons have been offered an opportunity to participate in the making of this amendment. It was almost unanimously agreed that there should be some restrictions placed on tires that had not been certified as complying with Standard No. 109. Several comments to the notice objected, however, to the requirement that the phrase "Unsafe for Normal Highway Use" be on the tire, on the ground that the word "Normal" was ambiguous. This designation has been found to have merit, and the word "Normal" has been omitted from the required phrase.

The requirement that the phrase be superimposed upon the manufacturer's name, or brand name, with lettering three-quarters of an inch high was objected to because the phrase would not be legible and could be easily removed. To avoid these problems, the requirement has been changed to provide that the phrase "Unsafe for Highway Use" be placed between the maximum section width and the tread and the height of the lettering reduced to one-half inch.

The proposal that the lettering of the term signifying the tire was unsafe for highway use be one-sixteenth of an inch deep was objected to because some tire casings have less than one-sixteenth of an inch of rubber on the outside of the sidewall and the alternative of one-half the thickness of the rubber covering the outside ply was not meaningful because the thickness could not always be determined. However, it is essential that the lettering be deep enough so that any attempt to buff it off will be easily recognizable and, therefore, the requirement that the lettering be one-sixteenth of an inch deep is being maintained. The change from the proposal to allow the lettering to be located anywhere between the maximum section width and the tread will allow the manufacturer to select a location where the rubber thickness is sufficient to impress lettering one-sixteenth of an inch.

Some comments suggested that the words "tube" or "tubeless" be required on the tire, even though the tire would not be used for passenger cars. This suggestion has been adopted in the final rule.

The requirement that the maximum inflation pressure and the maximum load rating be on the tire was omitted because they pertain to tires manufactured for passenger car use, not tires for off-road usage.

Some comments objected to the requirement that manufacturers report the quantity and serial numbers of reclassified tires sold and the names of distributors and dealers who purchase them. It was argued that keeping track of serial numbers, and distributors or dealers the tires were sold to would be burdensome and serve no safety related purpose. The Bureau feels that reporting of reclassified tires that are unsafe for highway use will provide the necessary control over these reclassified tires to assure that the tires will not be sold for passenger car use. Therefore, the reporting requirements have been maintained.

In consideration of the foregoing, Title 49—Transportation, Chapter V—National Highway Safety Bureau, Department of Transportation, Subchapter A—Motor Vehicle Safety Regulations, Part 571—Federal Motor Vehicle Safety Standard No. 109, New Pneumatic Tires—Passenger Cars is amended.

Effective date: December 1, 1970.

Since this amendment is designed to prevent a practice which can endanger the lives and property of the general public and because no comments were received objecting to the proposed effective date of December 1, 1970, in the notice of proposed rulemaking, good cause is shown that an effective date earlier than 180 days after issuance is in the public interest.

Issued on October 22, 1970.

Douglas W. Toms,
Director

35 F.R. 16734
October 29, 1970

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 71–4; Notice No. 1)

Federal Motor Vehicle Safety Standard No. 109, 49 CFR Part 571, as amended (35 F.R. 16735), specifies requirements for passenger car tire dimensions and laboratory test requirements, defines tire load ratings, specifies labeling requirements and sets forth the limited conditions under which passenger car tires that are not certified as complying with the standard may be sold. One of the labeling requirements of the standard (S4.3(d)) is that each tire be labeled on both sidewalls with the manufacturer's name or, if the tire is a brand name tire, with the brand name and an approved code mark assigned the manufacturer by the National Highway Traffic Safety Administration (formerly the National Highway Safety Bureau). Another labeling requirement (S4.3(i)) in the standard is that each tire contain on both sidewalls a certification statement or the symbol DOT, constituting the manufacturer's certification that the tire conforms to the standard. Both of these requirements are affected by the Tire Identification and Recordkeeping Regulation (49 CFR Part 574), as revised and published in this issue of the *Federal Register* (36 F.R. 1196), in that the Tire Identification and Recordkeeping Regulation specifies the location of the DOT symbol and requires that it be on either sidewall of the tire. Part 574 also establishes a system whereby all tire manufacturers apply for an assigned two-symbol code designation which is to be part of the tire identification number and placed on either sidewall. It is intended that these requirements take the place of the requirements in Standard No. 109 that tire manufacturers be assigned a three-number code and that it be placed on both sidewalls of brand name tires.

In view of the above, S4.3 of the passenger car tire standard is amended as set forth below to reconcile the requirements of Standard No. 109 with the requirements of the Tire Identification and Recordkeeping Regulation.

In addition, the labeling requirements (S4.3) are changed as set forth below to make it clear that each tire shall be labeled with only one size designation found in the tables in Appendix A of Standard No. 109, except that tires may have equivalent inch and metric size designations. The labeling requirements are further changed by deleting the paragraph which deals with tires manufactured before August 1, 1968, since the exception is no longer relevant.

Requirements for reclassified tires (S6.) are being amended to provide that the serial number required by S6.1(c), and the manufacturer's code symbol, if used, can be on either sidewall.

It is further noted that the correction published in the *Federal Register* of November 26, 1970 (35 F.R. 18118), was inaccurately stated as "for the period covering November 1, 1970 through July 31, 1971". Actually, the phrase to be corrected was "for the period covering December 1, 1970 through July 31, 1971." S6.2 should read "for the period covering December 1, 1970 through June 30, 1971", and for clarity S6.2 is republished with the correct language.

In consideration of the foregoing, Standard No. 109 of § 571.21 of Title 49, Code of Federal Regulations, is amended.

Effective date: May 22, 1971.

Because this amendment to Standard No. 109 relieves restrictions, clarifies the intent expressed in the standard, makes a correction to the standard and imposes no additional burden on any person, notice and request for comments on such notice are found to be unnecessary and impracticable, and good cause is shown that an effective date earlier than 180 days after issuance is in the public interest.

Issued on January 19, 1971.

Douglas W. Toms,
Acting Administrator, National Highway Traffic Safety Administration

36 F.R. 1195
January 26, 1971

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 71–6; Notice 1)

On January 26, 1971, the National Highway Traffic Safety Administration (NHTSA) published in the *Federal Register* (36 F.R. 1196) a revision of Part 574, Tire Identification and Record Keeping (Docket No. 70–12; Notice No. 5) to become effective May 22, 1971. Part 574, as revised, provides that the DOT symbol, constituting the manufacturer's certification that the tire conforms with applicable motor vehicle safety standards, must be above, below, or to the left or right of the tire identification number. In addition, under this part the tire identification number must include, as the first grouping within the number, a two-symbol code assigned by the NHTSA that identifies the manufacturer of the tire. This notice amends Standard No. 109 of Part 571, in order to allow manufacturers, at their option, to convert to the new tire identification system before the May 22, 1971, effective date.

The requirements of Part 574 relating to the certification symbol and the manufacturer's code number will take the place of the requirements in Motor Vehicle Safety Standard No. 109, Part 571 of this chapter, that the tire manufacturers place the DOT symbol and an assigned three-digit code number (in the case of brand-name tires) on both sidewalls. Accordingly, a notice published January 26, 1971 (36 F.R. 1195), amends Standard No. 109, effective May 22, 1971, to reconcile the requirements of that standard with the requirements of the Tire Identification and Record Keeping Regulation.

The Administration has received requests that tires manufactured before May 22, 1971, the effective date of Part 574, that are marked as prescribed by that part, not be required to be labeled on both sidewalls with the DOT symbol and the manufacturer's three-digit code required by Standard No. 109.

The requests have been found reasonable. In order to avoid unnecessary costs and allow for a smoother transition to the new requirements, Standard No. 109 is by this notice amended to provide that tires manufactured from March 1, 1971 to May 22, 1971, shall either meet the requirements of § 574.5, or, on both sidewalls, contain the DOT symbol and the manufacturer's three-digit code number required by S4.3(d) and S4.3(i) of Standard No. 109. Thus, tires manufactured during this period may be marked according to the current system, the new one effective May 22, 1971, or both.

Because this amendment to Standard No. 109 relieves restrictions and imposes no additional burden on any person, it is found that notice and public procedure thereon are unnecessary and impracticable, and that, for good cause shown, an effective date earlier than 180 days after issuance is in the public interest.

Issued on February 26, 1971.

Douglas W. Toms,
Acting Administrator

36 F.R. 4290
March 4, 1971

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109

Reclassified Tires

(Docket No. 70–2; Notice 4)

The purpose of this notice is to amend Motor Vehicle Safety Standard No. 109, to prohibit the manufacture and sale of passenger car tires that do not meet the performance requirements of the standard. Such tires are presently allowed to be sold as "reclassified tires." A notice proposing this action was published on November 27, 1971 (36 F.R. 22688).

Motor Vehicle Safety Standard No. 109, "New Pneumatic Tires," was amended October 29, 1970 (35 F.R. 16743), to allow passenger car tires which manufacturers did not certify as conforming to the performance tests of the standard, to be sold for off-highway purposes. The amendment required such tires to be labeled so that purchasers would be aware that they were considered unsafe for highway use. Moreover, manufacturers of such tires were required to report semi-annually to the NHTSA the number of tires sold. The purpose of the requirement was to allow the sale of such tires for off-highway purposes where a legitimate market existed for low-priced inexpensive tires, and where the fact that they failed to meet Federal performance tests would not pose a threat to users. Despite the conditions imposed by this amendment, the NHTSA continued to receive reports that significant numbers of these tires were being sold by unscrupulous dealers for passenger car, on-highway use.

Based upon its investigative efforts, and the material submitted to the docket in response to the notice of November 27, 1971, the NHTSA has determined that the continued sale of these tires should be prohibited, and that the substance of the rule proposed on November 27, 1971, should be implemented. Data which the NHTSA receives from manufacturers show an annual production of these tires in the neighborhood of 200,000 units. The NHTSA has concluded that it cannot by enforcement measures alone prevent a significant number of these tires from being sold as "reclassified tires" for use on motor vehicles.

As indicated in the preamble to the notice of November 27, the tire industry manufactures tires designed specifically for off-road applications which are not greatly more expensive than most reclassified tires. The dangers that may result from vehicles equipped with substandard tires far outweigh, in the opinion of NHTSA, the economic benefits obtainable from allowing these tires to be sold for off-road purposes.

Certain issues raised by the comments to the notice of proposed rulemaking have been determined to be of merit, and they are incorporated into this amendment. The comments pointed out that the reference to all tires of the type and size designation found in the appendix of Standard No. 109 included tires other than passenger car tires, namely, certain tires manufactured for agricultural purposes that are not required to conform to Standard No. 109. As issued, this amendment applies only to those tires of a type and size designation appearing in the appendix of Standard No. 109 that are designed for use on passenger cars.

The comments also pointed out that prohibiting the sale of these tires as of the amendment's effective date would penalize many dealers who may have large stocks of such tires on hand. It was not the NHTSA's intention to penalize dealers, who in good faith have purchased such tires for sale as "reclassified tires" under existing regulations, but rather to prevent the further reclassification of tires by manufacturers, and to

require them to dispose of such tires in a way that their use as motor vehicle equipment will be impossible. This amendment, therefore, applies to tires manufactured (not sold) after its effective date and prohibits, after that date, the further reclassification of tires and their sale by manufacturers. "Reclassified tires" presently on dealer's shelves may continue to be distributed and sold in accordance with the existing provisions (S6.) of Standard No. 109 dealing with reclassified tires until supplies are exhausted.

The comments further pointed out that the language of the notice that prohibited the sale of these tires "for any purpose" would not allow them to be sold even for scrap materials. The comments indicated that advantageous uses for scrap tires are presently being developed. The NHTSA has no reason to prevent the sale of these tires if their use as motor vehicle equipment is impossible, and the amendment allows their sale as scrap materials.

In light of the above, Motor Vehicle Safety Standard No. 109, "New Pneumatic Tires," appearing at 49 CFR 571.109, is amended . . . .

Effective date: October 1, 1972. The purpose of this amendment is to prevent a practice which is in violation of existing regulations, and whose continuance poses a threat to all users of the highways. Accordingly, it is hereby found that good cause exists for an effective date less than 180 days from the day of issuance.

This notice is issued under the authority of sections 103, 112, 119, and 201 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1392, 1401, 1407, 1421) and the delegation of authority at 49 CFR 1.51.

Issued on August 11, 1972.

Douglas W. Toms
Administrator

37 F.R. 16604
August 17, 1972

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 71–23; Notice No. 2)

The purpose of this notice is to amend Motor Vehicle Safety Standard No. 109, "New Pneumatic Tires", to require safety labeling information to be placed on the tire between the maximum section width and the bead, in order that this information can be retained on the casing if the tire is retreaded. A notice of proposed rulemaking regarding this subject was issued on December 21, 1971 (36 F.R. 24824).

A majority of the comments received in response to the notice agreed with the intent of the proposed amendment. However, objections were raised to the proposed requirement that the labeling information be located between the maximum section width and the bead on both sidewalls. The comments indicated that the use of whitewall designs limited the area between the section width and the bead, and that as a consequence, certain labeling information is placed between the maximum section width and the shoulder area to comply with the labeling requirements of Standard No. 109. Placing the information between maximum section width and bead on both sidewalls would evidently require the redesigning both of molds and lines of tires.

The agency has concluded after review of the information submitted to the docket that all labeling information should be located on both sidewalls of the tires as presently required by Standard No. 109. However, in response to the objections to the proposed requirements, only one sidewall is required to have the labeling information between the maximum section width and the bead. This will still allow information to be retained on casings so that retreaders need not relabel tires in meeting the requirements of Standard No. 117 (49 CFR 571.117).

In light of the above, Paragraph S4.3 of Motor Vehicle Safety Standard No. 109, "New Pneumatic Tires", § 571.109 of Title 49, Code of Federal Regulations, is amended . . . .

Effective Date: July 1, 1973.

This notice is issued under the authority of sections 103, 112, 113, 114, 119 and 201 of the National Traffic and Motor Vehicle Safety Act, 15 USC 1392, 1401, 1402, 1403, 1407, 1421, and the delegation of authority at 49 CFR 1.51.

Issued on October 31, 1972.

Charles H. Hartman
Acting Administrator

37 F.R. 23536
November 4, 1972

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 71–23; Notice 3)
(Docket No. 1–8; Notice 10)

This notice amends Motor Vehicle Safety Standards Nos. 109 and 117 (49 CFR 571.109) to reduce the minimum size of permanent safety labeling to 0.078 inches. Motor Vehicle Safety Standard No. 109, "New Pneumatic Tires," was amended November 4, 1972 (37 F.R. 23536), to specify both a location on the tire sidewall for safety labeling and a labeling size of not less than $\frac{3}{32}$ of an inch. Motor Vehicle Safety Standard No. 117, "Retreaded Pneumatic Tires", was amended March 23, 1972 (37 F.R. 9590), to specify permanent labeling of the same minimum size.

The Michelin Tire Company has protested that the $\frac{3}{32}$ inch minimum size is inconsistent with the existing practice of European tire manufacturers of labeling tires in letters having a size of 0.078 inches (2mm). It has pointed out that as a consequence of the amendment, European tire manufacturers will have to increase the size of all existing labeling. The NHTSA has concluded that the difference between letters 0.078 inches in size and those of 0.093 inches is not significant, and does not justify the resultant expense to manufacturers of modifying tire molds. By this notice the NHTSA therefore reduces the minimum size to 0.078 inches for labeling required by S4.3 of Standard No. 109.

Because the permanent labeling provisions of Standard No. 117 are intended to be ultimately met with new tire labeling, the size requirements for permanent labeling in that standard are also modified.

In light of the above, Motor Vehicle Safety Standard No. 109, 49 CFR 571.109, and Motor Vehicle Safety Standard No. 117, 49 CFR 571.117, are amended as follows:

Effective dates: July 1, 1973, for the amendment to S4.3 of 49 CFR 571.109; February 1, 1974, for the amendment to S6.3.2 of 49 CFR 571.117. These amendments relieve an unnecessary restriction without a significant effect on motor vehicle safety. Consequently, it is found for good cause that notice and public procedure thereon are unnecessary, and that an effective date less than 180 days from the day of issuance is in the public interest.

(Secs. 103, 112, 113, 114, 119, 201, Pub. L. 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1402, 1403, 1407, 1421; delegations of authority at 49 CFR 1.51.)

Issued on March 8, 1973.

James E. Wilson
Acting Administrator

38 F.R. 6999
March 15, 1973

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 71-10; Notice 3)

This notice amends the requirements for high speed performance and endurance applicable to passenger car tires in Motor Vehicle Safety Standard No. 109, "New Pneumatic Tires", by adding additional criteria to the description of tire failure. A notice of proposed rulemaking on which this amendment is based was published September 20, 1972 (37 F.R. 19381). That notice proposed to modify the criteria for tire failure in both Standard No. 109 and Standard No. 117, "Retreaded Pneumatic Tires". As the tests for high speed performance and endurance have been revoked in Standard No. 117, this amendment affects only the requirements of Standard No. 109.

The proposal of September 20, 1972, was designed to expand the description of tire failure to include certain characteristics which had appeared in tires tested by NHTSA, and which were considered to be evidence of potential in-service tire failure, but which were not specifically prohibited by the existing language of the standard. These conditions included tread-groove cracking, deep sidewall separations, and damage to areas such as the tire innerliner. Standard No. 109 presently prohibits tires tested to the high speed performance and endurance tests of the standard from exhibiting "tread, ply, cord, or bead separation, chunking, or broken cords". The proposal would have prohibited, as a result of either of the two tests, the displacement of any tire component from its design position, including partial or complete separation of any component from any other component, but would not have prohibited exposure of chafer fabric and surface cracking that did not expose ply cord or belt cord. Any crack in a tread groove that exceeded three-sixteenths of an inch in length would, however, have also been prohibited. The proposal also contained an "air-loss" test, which would have required the tire to retain at least 95 percent of its initial inflation pressure when measured immediately after each performance test.

Numerous comments were received in response to the proposal. While most were in agreement with its general purpose, to provide a more inclusive definition of tire failure, almost all disagreed with the method proposed. The principal objection, raised by the Rubber Manufacturers' Association and major tire companies, was that the proposed language was too broad: that it included within the concept of tire failure many conditions that were in no way detrimental to tire performance. It was pointed out that many such conditions might exist in tires before laboratory wheel tests had been conducted and were considered by industry to be no more than inconsequential manufacturing imperfections. The comments argued that such conditions included cracking at an innerliner splice, innerliner blisters, innerliner folds, mold off-register, sidewall blisters, light tread, tearing or chipping of tread element, cord impression in the bead area, light bead, and bead cracks at the toe. The comments suggested as an alternative to the proposed language that the requirements be revised to specifically include the problem conditions that NHTSA testing had produced, and provided possible definitions to describe these conditions.

The NHTSA has determined that this suggested approach will satisfy the purpose of the proposal, and adopts it essentially as suggested by the domestic tire industry. Prohibitions against sidewall and innerliner separation, cracking, and open splices will be added to

the standard. New definitions, for "innerliner" and "innerliner separation", "cracking", "open splice", and "sidewall separation" are added to the standard. These definitions are essentially as suggested by the Rubber Manufacturers' Association, with the exception of "innerliner separation". The suggested definition would have limited tire failures involving innerliner separation to those demonstrating air loss. The NHTSA has not adopted this air-loss restriction for the following reasons. First, the NHTSA is of the opinion that innerliner separation exhibited on a "hot tire", one having just completed either of the laboratory wheel tests, is evidence of potential in-service tire failure, irrespective of whether actual air loss has occurred at that point. Second, the air-loss test adopted for the standard, and discussed in greater detail below, measures only a gross, or substantial air loss occurring during the test, and not the type of lesser air-loss that might result from an innerliner separation.

The standard is presently silent with respect to the method for determining whether the prohibited tire conditions exist. Several comments proposed that the failure modes be determined "visually". One comment suggested that touch, or X-rays, be specified. As amended, the standard specifies that prohibited conditions will, consistently with the larger body of opinion, be determined visually. This method is that used by NHTSA in past testing, and it has proven satisfactory. It is specifically included in the standard for purposes of clarification, but is not intended to preclude the use of simple hand magnification.

The standard is likewise silent on the issue of a given tire's condition before the running of the two laboratory wheel tests. The position taken by NHTSA in its enforcement of this standard up to now is that the specified laboratory tests are not required to be performed in order for a tire to be considered a failure, when the tire evidences any of the prohibited conditions before it is subjected to either test. The Rubber Manufacturers' Association submission to this docket implicitly reflects this point of view. The substance of that submission was that the proposed language would have categorized as failures certain conditions which appear in untested, newly manufactured tires. The NHTSA is specifically amending Standard No. 109 in this issuance to reflect past agency interpretation and enforcement practice, by adding to the general requirements language prohibiting any tire before test from exhibiting those characteristics prohibited after either of the laboratory wheel tests.

One comment requested that a minor loss of tread resulting from the micro-siping process should not be considered a failure, despite the fact that this condition arguably comes within the prohibitory language. The position of the NHTSA is that micro-siping should be treated similarly to any other manufacturing process. Consequently, the removal of very small tread section during micro-siping, which is part of the manufacturing process, will not be considered a nonconformity. However, where the chunking of tread occurs as a result of the specified laboratory wheel tests, it will be considered a failure regardless of its amount.

One comment argued that the proposed test procedure, calling for a test rim that undergoes no permanent deformation, was not reflective of actual conditions. It argued that such a rim would have to be of massive construction, and suggested alternatively the continued use of existing test rims. The comment misunderstands the purpose of the procedure. The condition precluding any permanent deformation of the rim is intended only to ensure, together with the other language regarding air loss, that any air leaks will result necessarily from the tire, and not the test device. In other words, the provision is inserted to ensure that the tire will not be "blamed" for any air loss due to rim deformation. The condition that the rim undergo no permanent deformation is not intended to require the manufacture of a new genre of test rims; in practice, test rims currently in use do not deform significantly during the laboratory wheel test procedures, and the amended regulation will not prevent their continued use.

Many comments objected to the proposed air loss test, requiring the tire to have at least 95 percent of its original cold inflation pressure when tested immediately after both the high speed and endurance tests. The comments argued that conducting an air-pressure reading imme-

diately after the running of the tests was potentially hazardous to persons conducting the test. In addition, certain comments argued that the 95 percent air-retention requirement was inadequate, in that the test called for the measurement to be made on a "hot" tire, and the pressure would be significantly less if the tire were first allowed to cool.

The NHTSA has retained in the amendment both an air-loss test, and the requirements that the measurement be made, as proposed, immediately after both the high speed and endurance tests are completed. The NHTSA believes that inspection of the tire to determine if any prohibited conditions exist should be made when the tire is still at the higher temperatures created during the laboratory tests. As tires do increase in temperature during actual use, the inspection of tested tires at higher temperatures provides a more realistic environment for the discovery of conditions that can result in failure. Thus, it becomes mandatory to conduct the air-loss test immediately after the tire has been subjected to the laboratory wheel tests in order that the inside of the tire can be examined for failure modes while the tire is still at higher temperatures.

The NHTSA does not consider an objection to a test requirement on the basis that it may present a hazard to testing personnel to have merit. Test laboratories are places where products are subjected to extreme, often destructive, processes under controlled conditions by trained technicians using whatever equipment and safeguards are necessary, in order to assure the safety of the public that must use those products under uncontrolled conditions without comparable training or safeguards. The NHTSA is not indifferent to the safety of test technicians. On the contrary, it urges those in charge of test laboratories to take all necessary steps to assure the safety and health of their employees. But if a particular method of running a regulatory test such as the one in question here is found hazardous to test personnel, the proper remedy is not to change the regulation, but to devise methods and equipment to perform the test process safely. The NHTSA is confident that modern technology and the testing profession are equal to the task.

The argument that the proposed test allowed a significant air loss to occur is meritorious. The NHTSA has modified the proposal by restricting the allowable air-loss to not less than the tire's inflation pressure at the beginning of the tests. Admittedly, this modification is not fully responsive to the comments, for this requirement permits as well a rather significant air loss. However, the air-loss test is designed to prevent only gross, exaggerated air-loss, and not instances of slow air leaks. Moreover, while tire inflation pressure will increase under test, it appears that the amount of increase may vary greatly from test to test. Variables such as tire expansion may also affect any increase in inflation pressure. Consequently, it is difficult to establish a value, in excess of the original pressure, that can accurately indicate a condition of air loss. The NHTSA has determined, therefore, to require only that the tire, when hot, have at least its initial cold inflation pressure. This lowers the amount of permissible air loss from that proposed, prohibits the exaggerated air loss which is NHTSA's primary concern, and still takes into account the variations in inflation pressure increase that may occur.

In light of the above, Motor Vehicle Safety Standard No. 109, "New Pneumatic Tires," appearing at 49 CFR § 571.109, is amended. . . .

Effective date: March 29, 1974.

(Sections 103, 119, 201, and 202 Public Law 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1407, 1421, and 1422; delegation of authority at 49 CFR 1.51.)

Issued on September 24, 1973.

James B. Gregory
Administrator

38 F.R. 27050
September 28, 1973

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 71–10; Notice 5)

This notice responds to petitions for reconsideration received in response to the notice, published September 28, 1973 (38 F.R. 27050), revising the performance requirements of Motor Vehicle Safety Standard No. 109 (49 CFR 571.109). That notice modified the criteria for tire failure when tires are subjected to the high speed performance and endurance tests of the standard.

Timely petitions for reconsideration were received from five parties: The Firestone Tire and Rubber Company, Rubber Manufacturers' Association, Uniroyal Tire Company, B. F. Goodrich Tire Company, and the General Tire and Rubber Company. The petitions requested the agency to reconsider the definition of "innerliner separation" and the requirement that the tire be removed from the test wheel for inspection immediately after the prescribed tests are completed.

The petitions have argued that the definition of "innerliner separation" (a "parting of the innerliner from the carcass") is inconsistent with the definition of "carcass" ("the tire structure, except tread and sidewall rubber"), for the former unlike the latter creates the inference that the innerliner is not part of the carcass. One petitioner (B. F. Goodrich) argued that innerliner should not be considered part of the carcass and would redefine carcass to so specify. The NHTSA agrees with the comments which argue that the definition of "innerliner separation" should reflect that the innerliner is part of the carcass. That definition is accordingly modified as recommended by the petitions to mean a separation of the innerliner from the cord material of the carcass. The NHTSA believes no ascertainable benefit would be achieved by further distinctions within the definition of "carcass." The requirement prohibiting the separation of the innerliner from the carcass cord material is the same whether or not the definition of "carcass" is further refined.

The petitions also state that innerliner is frequently composed of more than one layer of material. The definition of innerliner is revised to take this into account. However a separation of one innerliner layer from another does not constitute "innerliner separation" under the standard. That term means only a separation of the innerliner from the carcass cord material. The requirements specify that "visual evidence" of enumerated conditions will constitute a failure to the standard. The NHTSA believes the visual test, which has been consistently used in the past, to be satisfactory. However, in the case of innerliner separation, the visual evidence may not reflect an actual separation of the cord material from the innerliner. In such cases the standard is not intended to preclude a more detailed examination of the condition, including a cutting of the tire. This procedure has been afforded to manufacturers in past NHTSA enforcement efforts, and is considered consistent with the revised requirements.

The petitions also requested modification of the requirement that each tested tire be removed from the test wheel for inspection immediately after its testing is completed. The petitions argue that rapid deflation of a hot tire can cause innerliner separation. While several petitions recommended that the tire be allowed to cool to ambient temperature, Uniroyal has indicated that a one-hour period had been found sufficient to eliminate the chance that artificially caused separations will occur. The NHTSA agrees with the comment from Uniroyal that a one-hour

period is adequate for the tire to cool and has amended the standard accordingly.

The Rubber Manufacturers' Association has argued that minor nicks and tears in the tread which would not grow in size during service might be improperly considered "chunking" under the standard. RMA alludes to the discussion of the micro-siping process in the preamble to the notice of September 28, 1974, claiming it recognizes that small pieces of the tread can be broken away which do not affect performance. The standard is clear that chunking in a new tire before testing will be considered a failure. A minor tear in the tread does not appear to involve a removal of rubber from the tire, and is not within the definition of chunking. Whether a "nick" in the tread represents chunking would necessarily be based on its size. As in micro-siping, minor tread loss resulting from the manufacturing process that is evident before test does not constitute a failure. Any loss resulting from the laboratory wheel test is a failure.

In light of the above, Motor Vehicle Safety Standard No. 109, "New Pneumatic Tires," appearing at 49 CFR 571.109, is amended. . . .

Effective date: March 29, 1974. This amendment modifies slightly amendments whose effective date was originally established as the above date on September 28, 1973. As these amendments relieve restrictions, provide clarification, and impose no additional burden on any person, good cause is found for an effective date less than 30 days from publication.

(Secs. 103, 110, 201, and 202, Pub. L. 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1407, 1421, and 1422; delegation of authority at 49 CFR 1.51.)

Issued on March 25, 1974.

James B. Gregory
Administrator

39 F.R. 11423
March 28, 1974

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires

(Docket No. 74–29; Notice 1)

This notice republishes and corrects the text of Federal Motor Vehicle Safety Standard No. 109 (49 CFR § 571.109a), excluding Table I of the Appendix.

The corrections eliminate both typographical errors which occurred in the codification of the standard (in the *Code of Federal Regulations*) and material now extraneous as a result of amendments to the standard and the adoption of the Tire Identification and Recordkeeping Regulations, 49 CFR Part 574. The corrections are as follows:

(1) Figure 1 is deleted, and Figures 2 and 3 are redesignated Figures 1 and 2 respectively.

(2) Paragraph S5.2.1.3 and S5.2.2.1 are modified to reflect the changes in the designations of Figures 2 and 3.

(3) Paragraph S6 is corrected to reflect the amendment of August 17, 1972 (37 F.R. 16604), by deleting paragraph S6.1 and the paragraphs following.

The notice also redesignates the standard as § 571.109. The previous designation, § 571.109a, resulted from an amendment (38 F.R. 27050, September 28, 1973) with a future effective date (March 29, 1974) outstanding at the time the most recent version of the Code was published. The passing of that effective date eliminates the need for Section 571.109a.

In light of the above, § 571.109a (excluding Table I of the Appendix) of Title 49, Code of Federal Regulations, is redesignated § 571.109 and corrected and republished . . . .

(Secs. 103, 119, 201, 202, Pub. L. 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1407, 1421, 1422; delegations of authority at 49 CFR 1.51.)

Issued on August 7, 1974.

James B. Gregory
Administrator

39 F.R. 31322
August 28, 1974

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109

(Docket No. 74–3; Notice 2)

This notice amends Motor Vehicle Safety Standard No. 109 (49 CFR 571.109) to specify the use of test wheels having up to 6 test positions in NHTSA compliance testing. A notice of proposed rulemaking regarding this subject was published January 10, 1974 (39 F.R. 1516).

Standard No. 109 has not previously specified the number of test positions which may be present on any given test wheel. Agency testing has been conducted on test wheels having up to six positions, which appears to be the maximum capacity of these wheels. The NHTSA is of the opinion that this testing is fully consistent with the standard's test procedure, but in order to avoid legal disputes has decided to clarify the standard by specifically incorporating into it NHTSA's present compliance testing practice.

The one comment which was received regarding the proposal did not object to the amendment's substance, but requested that temperatures be carefully monitored in NHTSA testing. The test temperature is specified in the standard and applies to each test regardless of the number of positions on a given test wheel. The NHTSA will continue to carefully monitor its tire testing program to ensure the accuracy of the results obtained.

In light of the above, 49 CFR § 571.109 (Motor Vehicle Safety Standard No. 109) is amended by the addition of a new paragraph (f) in S4.2.1 . . . .

Effective date: October 7, 1974. This amendment is clarifying in nature, reflecting present practice, and poses no additional burden on any person. Consequently, good cause is found for an effective date less than 180 days from publication.

(Secs. 103, 108, 119, 201 and 202, Pub. L. 89–563; 80 Stat. 718; 15 U.S.C. 1392, 1397, 1407, 1421, 1422; delegations of authority at 49 CFR 1.51.)

Issued on August 30, 1974.

James B. Gregory
Administrator

39 F.R. 32321
September 6, 1974

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires

(Docket No. 74–25; Notice 2)

This notice amends the definition of "test rim" in 49 CFR 571.109 (Motor Vehicle Safety Standard No. 109) and modifies related provisions of that section and section 571.110 (Motor Vehicle Safety Standard No. 110). A conforming amendment is made to similar provisions in section 571.119 (Motor Vehicle Safety Standard No. 119). The notice of proposed rulemaking on which this amendment is based was published on July 10, 1974 (39 F.R. 25329).

The definition of "test rim" has previous to this amendment referenced the 1967 and earlier editions of publications of various foreign and domestic tire and rim associations as the source for determining rim specifications and appropriate tire/rim matching information for testing tires to the requirements of Motor Vehicle Safety Standard No. 109, and for equipping passenger cars pursuant to Motor Vehicle Safety Standard No. 110. The Rubber Manufacturers' Association petitioned that this reference be changed because the publications have become outdated in terms of the rim information they provide. This amendment, which adopts the proposed rule of July 10, 1974, in essentially the form proposed, deletes the references to the 1967 and earlier publications and substitutes for them the publications of the various associations current at the time of tire manufacture.

Under the amendment, a "test rim" will be any rim listed for use with a tire size designation in any of the current publications of the various foreign and domestic tire and rim associations. The listing will apply to all tires that fit the description (by tire size designation, use category, etc.) unless the publication itself or a separately published manufacturer's document states otherwise. A manufacturer wishing to except any tire manufactured by him from any listing would be expected to request the association to publish the exception in its publication. If it does not, the manufacturer must himself publish the exception in his own listing, which he must distribute to his dealers, this agency, and to any member of the public on request. The language of the proposal is clarified, and a conforming amendment made to Standard No. 119 to show that an exception must be published in each association publication listing the tire and rim combination. The amendment further specifies that a "listing" of a rim must contain dimensional specifications, including diagrams, for the rim. This is necessary to provide for uniformity of rim dimensions and reflects the present practice of association publications of publishing such dimensional specifications. However, dimensional specifications or a diagram of a rim need not be included in manufacturers' separate listings if the specifications and diagram for the rim appear in each association publication where it is listed.

By referencing the current publications, the amendment ends the need for Appendix "A" of Standard No. 110, which lists tire/rim combinations approved for use subsequent to the 1967 and earlier associations publications. The associations and various manufacturers should ascertain that all tire/rim combinations presently listed in that Appendix are incorporated into at least one of their respective publications before the effective date of this amendment. Moreover, the addition of new tire/rim combinations subsequent to the effective date becomes the sole responsibility of the industry. Appendix "A" of Standard No. 109, listing tire size designations, is not affected by this amendment.

An effect of the amended definition of test rim is to clarify this agency's position that each tire must be able to pass each performance requirement (except that for physical dimensions) of Standard No. 109 with any rim with which it is listed, regardless of rim width, unless that tire is specifically excepted from each listing where it appears. The requirements for physical dimensions must be met only on a test rim of the width specified for the tire size designation in Standard No. 109. A tire failing the requirements on any test rim would be considered as having failed the requirements on all test rims. This continues existing NHTSA enforcement policy.

One of the two comments received regarding the proposal objected to this aspect of the amendment, arguing that some manufacturers have traditionally certified conformity on the basis of test results using only the test rims of the specified test rim width and that no safety problems had been encountered. The NHTSA believes, however, that the interest of safety demands that manufacturers ensure that tires certified as conforming to Standard No. 109 will conform to the standard's requirements on any rim which the manufacturer lists for use with the tire and with which the tire may consequently be used in service. This position has been reflected in the guidelines for the additions of new tire/rim combinations to the Appendix of Standard No. 110, which have required that the manufacturer demonstrate conformity to Standard No. 109 on each newly requested rim. If a manufacturer doubts the ability of his tires to conform to the standard on certain recommended rims, he has the option of excepting his tires from being used with those rims. No other objections to the proposed rule were received.

In light of the above, amendments are made to 49 CFR §§ 571.109, 571.110, and 571.119 . . . .

Effective date: August 5, 1975 for Standard No. 109 and 110; March 1, 1975, for Standard No. 119. The amendment to Standard No. 119 is of a clarifying nature, and should be made effective with the existing effective date of that standard. The amendment does not require substantial leadtime for conformity, and it is found for good cause shown that an effective date less than 180 days from publication is in the public interest.

(Secs. 103, 119, 201, 202, Pub. L. 89-563, 80 Stat. 718; 15 U.S.C. §§ 1392, 1407, 1421, 1422; delegation of authority at 49 CFR 1.51.)

Issued on January 31, 1975.

James B. Gregory
Administrator

40 F.R. 5529
February 6, 1975

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires

(Docket No. 74–25; Notice 4)

This amendment of safety Standard No. 109, *New Pneumatic Tires*, permits the manufacture of both a new series of tires having load ratings and inflation pressures expressed in metric units and a newly designed tire having a maximum inflation pressure of 60 psi. The change metric-unit tires accommodates a world-wide standardization process, and the change for 60-psi tires accommodates tires designed as substitutes for conventional spare tires, in order to reduce the overall weight of, and increase storage space in, passenger cars.

Effective date: March 7, 1977.

For further information contact:

Arturo Casanova
Office of Crash Avoidance
Motor Vehicle Programs
National Highway Traffic
Safety Administration
Washington, D.C. 20590
(202–426–1715)

On September 30, 1976, the NHTSA published a proposed rule (41 FR 43192) to amend the requirements of Standard No. 109 (49 CFR 571.109) as indicated in the summary statement. All comments received supported the amendments, except that Dunlop Corporation suggested that adoption of metric-series tires be delayed while other approaches to the world-wide standardization of tire sizes and nomenclature are studied. Because the agency's ability to further modify the standard in response to future standardization efforts is not hindered by final action on metric-series tires, the proposed changes are adopted, for the reasons set forth below.

TIRE PERFORMANCE REQUIREMENTS

Goodyear Tire and Rubber Company and the Rubber Manufacturers Association (RMA) petitioned for the adoption of new requirements and test specifications necessary to permit the production of a metric-series family of tires that differ in specification and construction from existing tire types. The metric-series tires have load ratings expressed in kilograms (in place of pounds) and inflation pressures expressed in kilopascals (kPa) (in place of pounds per square inch (psi)).

Firestone Tire and Rubber Company petitioned for the adoption of new requirements and test specifications necessary to permit the production of a "temporary use" spare tire that differs substantially in specification and construction from conventional tires. This tire type has a higher inflation pressure (60 psi), different dimensions, and a shorter treadwear life than conventional tires. In some cases its diameter may differ from that of the conventional tires it is designed to replace.

The NHTSA concluded that the new tire types should be accommodated by appropriate revisions of the requirements and test specifications, as long as they can meet the same safety performance levels of the standard as conventional tires do. Data supplied by Firestone indicate that no significant degradation of vehicle handling occurs when the 60-psi tire is used on a vehicle in conjunction with three conventional tires, despite the substantial differences in its construction and other characteristics.

Endurance and high-speed performance. The standard sets forth endurance and high-speed performance requirements that are conducted by pressing the tire against a test wheel at various levels of force. The appropriate force levels are taken from tables of information contained in the standard that list each passenger car tire size presently produced for use in the United States.

In anticipation of deletion of these tire tables, the agency proposed that the appropriate force levels for the new tire types be stated as percentages of the maximum load rating of the tire, corresponding to the values set out in the standard's existing tables, but without the need to add additional tables to the standard.

Vehicle manufacturers, the RMA, and Goodyear requested that, in the case of metric-series tires, the new force levels be adopted using tire tables instead of the percentage method. Detailed review of the proposal demonstrates that use of a flat percentage would have an unintended result. Specifically, the tire selection standard for passenger cars (Standard No. 110, *Tire Selection and Rims* (49 CFR 571.110)) requires that the normal load-carrying ability assigned to a tire be no more than that used for the test loading in the Standard No. 109 high-speed performance test. Thus, the practical result of replacing specifically assigned test loads in Standard No. 109 with percentages would be an unintentional reduction of the tire's assignable load-carrying capabilities in some cases. Goodyear and the RMA provided tire tables for the metric-series tires that specify values that are approximately the same as the percentage values proposed.

Having reviewed these comments and the tables provided by the tire industry, the NHTSA finds that test values derived from the tables are, for safety purposes, virtually the same as the percentage values proposed and therefore fall within the ambit of the proposal. Accordingly, the agency has decided to incorporate additional tables in the standard as the basis for amendments of the high speed and endurance requirements for metric-series tires. Percentage values are required for the 60-psi tires because their tire tables do not list the appropriate values.

The general issue of deletion of tire tables from Standard No. 109 will be addressed comprehensively in future rulemaking.

With regard to the new tire tables, Goodyear and the RMA noted that additional metric-series tire sizes have been developed since the submission of their petitions. Firestone noted that additional 60-psi type tires have also been added to those proposed. These commenters asked that the additional tire listings be added to the standard. Although not proposed, the agency believes that the new listings can be added to the standard in the same manner that routine tire table changes are regularly made by the agency in accordance with published procedures (33 FR 14964, October 5, 1968) (39 FR 28980, August 31, 1974). These guidelines specify procedures by which routine additions are made without notice, unless any objection is subsequently received.

Testing of a conventional tire on a test wheel is conducted at the "design" load level (with overloading in the case of endurance testing up to the maximum load rating of the tire) and corresponding inflation pressure. Because the 60-psi tire does not have a "design" load level but only a single load level at its maximum inflation pressure of 60 psi, the agency used this single load level as if it constituted the design load level. The RMA demonstrated that the single load level of these tires is more accurately characterized as its maximum load level, and that a lower load level would constitute the tire's design load. Because the 60-psi tire is intended only for occasional use as a spare tire, it is not assigned the lower "design" load ratings that are provided in the case of conventional tires to improve vehicle ride.

The NHTSA accepts this view of the 60-psi tire's design load rating and makes appropriate adjustments in the tables that appear in S5.4.2.3 and S5.5.1. In the case of inflation pressures, 52- and 58-pound values are utilized in Table III, consistent with comparable values for conventional tires.

Strength requirements. The agency proposed breaking energy requirements for the new tire types that are comparable to those for existing tires. The only comment on these proposed amendments were RMA suggestions for modification of terminology and the statement of breaking energy values in Table III. The test values are made final as proposed.

The RMA believed that reference to tires with a certain "designated" section width would be clarified by reference to "specified" section width instead. The agency disagrees, and notes that the word "designated" conveys the intended meaning that section width characteristics are

controlled by the manufacturer and not "specified" by this or any other Federal regulation.

In its comments on this and other aspects of the proposal, the RMA suggested that the listing of English-system equivalents following metric-system values (and vice versa) would improve the clarity and informational value of Standard No. 109. General Motors Corporation (GM) also encouraged the listing of measurement equivalents in safety standards.

The agency believes it made clear in its proposal the reason why the publication of equivalent values in a motor vehicle safety standard is totally inappropriate. Motor vehicle safety standards are not informational or advisory documents but rather are minimum standards which must be complied with on pain of civil penalty. For this reason they must be stated objectively, without confusion. Because the equivalence of the metric and English systems is not exact, using significant figures, the listing of approximate English-system equivalents in the standard would produce some confusion concerning what are the real test conditions or performance levels required. For example, several NHTSA requirements specify a 30-mph barrier crash as a procedure underlying certain minimum crashworthiness capabilities. If the metric equivalent (49 km/h) were listed next to this 30-mph value, it would convey the impression that the manufacturer (and the agency) has the choice whether to test at 30 mph or at 30.4 mph. Thus, the statement of an "equivalent value" that is not in fact equivalent only confuses in a regulatory environment where objectivity is important and is required by statute (15 U.S.C. § 1392(a)). For this reason, the RMA suggestion to add English-system and metric equivalents to Table II and the GM suggestion to add "dual dimensioning" throughout the standard are not adopted.

Physical dimensions. The NHTSA proposed a "growth allowance" for the new tire types that is comparable to the requirement for existing tires, with the addition of a 0.4-inch minimum for technical reasons in the case of both the metric-series tires and the 60-psi tire. Goodyear and the RMA requested that the 0.4-inch allowance be restated as a 10-millimeter allowance, in view of its association with metric series tires. These requests are denied, because the 0.4-inch allowance is also associated with the 60-psi tire which does not have metric values. As a general matter, the agency intends to make a systematic change to metric measurements in its standards, rather than making isolated and arbitrary changes which consist of simple substitutions of near equivalents without regard to the basic units of the metric system.

Tubeless tire resistance to bead unseating. The NHTSA proposed that the force levels which must be sustained by conventional tubeless tires without bead unseating should be modified appropriately for the 60-psi tire because of its uncharacteristic section width. No objection was made to the proposed performance values and they are made final without change. The RMA noted that its earlier recommendations for test fixture modification should be implemented in two minor respects based on further testing of the new tire type. One dimension of the text fixture should have been three-tenths-of-an-inch longer than proposed, and the cross section of the bead unseating block should have been narrower to avoid contact with the rim on which the tested tire is mounted. The agency considers these minor modifications from the proposed values to fall within the scope of the proposal and adopts the changes in the final rule.

TIRE LABELING

The NHTSA proposed that the metric-unit inflation pressure and load rating on metric-series tires be supplemented by English-system equivalents on the tire sidewall. Unlike the confusing listing of near-equivalent values in a performance standard, the use of equivalent markings on the tire sidewall can be of substantial benefit to the user without introducing confusion. No commenter objected to the proposed supplementary markings, and they are made final as proposed. General Motors suggested that "rounding" conventions be established to further assist the consumer. The agency does not wish to restrict the tire manufacturer's latitude in this area, and declines to adopt this suggestion in the absence of a demonstrable safety problem.

The agency proposed that the legend "Inflate to 60 psi" appear on the sidewall of the new 60-psi tire to make clear its distinctive inflation

requirement. The RMA suggested that the proposed limits on location of the legend should be somewhat relaxed in view of the comparatively small size of the 60-psi sidewall. The agency agrees that some relaxation of the requirement is justified. As made final, location of the legend is limited to the area between the tire shoulder and the bead of the tire.

OTHER CONSIDERATIONS

The agency specifically addressed the possibility that consumers would have difficulty with the unconventional characteristics of the 60-psi tire, and that some safety problems could result from the confusion. The only problem raised by the agency that was responded to by commenters was the issue of storage of a large conventional tire after replacement by the smaller 60-psi tire, assuming that the car's trunk were full. Commenters minimized the extent of the problem, and Firestone noted that a majority of tires fail when the vehicle has been parked for a significant period of time, not on the highway.

In consideration of the foregoing, Standard No. 109 (49 CFR 571.109) is amended. . . .

Effective date finding: Because the amendments relieve a restriction and do not create additional requirements for any person, and because of vehicle manufacturers' need to settle on allowable tire designs as soon as possible, an immediate effective date is found to be in the public interest.

(Sec. 103, 112, 114, 119, 201, 202, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1401, 1403, 1407, 1421, 1422); delegations of authority at 49 CFR 1.50 and 49 CFR 501.8.)

Issued on March 1, 1977.

John W. Snow
Administrator

42 F.R. 12869
March 7, 1977

PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 74–25; Notice 6)

This amendment clarifies the applicability of the Figure 2A bead unseating block and corrects typographical errors in Figure 2A. This amendment is made pursuant to a request from the Rubber Manfacturers Association (RMA).

Effective Date: March 23, 1978.

For Further Information Contact:

John A. Diehl, Crash Avoidance Division, Office of Vehicle Safety Standards, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590 (202–426–1715).

Supplementary Information: The Rubber Manufacturers Association (RMA) has petitioned the National Highway Traffic Safety Administration (NHTSA) to amend the language of S5.2.1.3 of Federal Motor Vehicle Safety Standard (FMVSS) 109 to clarify that only a Figure 2A bead unseating block is to be used in testing tires having an inflation pressure of 60 psi. The current language has created uncertainty as to whether only the Figure 2A block must be used, or whether both the Figure 2 and Figure 2A blocks must be used, depending on the type of tire being tested. In addition, the RMA requested the correction of several typographical errors in Figure 2A.

The NHTSA agrees that the current language is ambiguous and that Figure 2A contains inaccuracies. The NHTSA therefore finds both RMA requests to be reasonable, and they are granted.

As this amendment is interpretative in nature and reflects current understanding and practice, it is found for good cause that notice and public procedure thereon are unnecessary, and that an immediate effective date is in the public interest.

The principal authors of this document are John A. Diehl, Crash Avoidance Division, and Robert M. Churella, Office of Chief Counsel.

Accordingly, paragraph S5.2.1.3 of 49 CFR § 571.109 is amended. . . .

(Secs. 103, 119, 201, and 202, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407, 1421, and 1422); delegation of authority at 49 CFR 1.50.

Issued on March 17, 1978.

Joan Claybrook
Administrator

43 F.R. 12015
March 23, 1978

PREAMBLE TO AN AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires for Passenger Cars

(Docket No. 80-01; Notice 1)

ACTION: Final rule.

SUMMARY: Pursuant to petitions by the Rubber Manufacturers Association (RMA) and the Michelin Tire Corporation (Michelin), this notice amends Federal Motor Vehicle Safety Standard No. 109, *New Pneumatic Tires—Passenger Cars,* by adding certain tire size designations to Appendix A of that standard. This amendment permits the introduction into interstate commerce of the new tire sizes.

EFFECTIVE DATE: 30 days from the date of publication in the Federal Register, if objections are not received before that date. March 20, 1980.

ADDRESSES: Comments should refer to Docket No. 80-01 and be submitted to Docket Section, Room 5108, 400 Seventh Street, S.W., Washington, D.C. 20590. (Docket hours 8 a.m. to 4 p.m.)

FOR FURTHER INFORMATION CONTACT:

John Diehl, Office of Automotive Ratings, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20950 (202-426-1714).

SUPPLEMENTARY INFORMATION:

According to agency practice, the National Highway Traffic Safety Administration (NHTSA) responds to petitions for adding new tire sizes to Table I of Appendix A of Standard No. 109 by quarterly issuing final rules under an abbreviated rulemaking procedure for expediting such routine amendments. Guidelines for this procedure were published at 33 FR 14964; October 5, 1968, and amended at 36 FR 8298; May 4, 1971; 36 FR 13601; July 22, 1971; and 39 FR 28980; August 13, 1974. These guidelines provide that these final rules become effective 30 days after their date of publication if no comments objecting to them are received by NHTSA during this 30 day period. If objections are received, regular rulemaking procedures for issuing and amending motor vehicle safety standards are initiated.

On November 27, 1979, RMA petitioned for the addition of a new tire size to an existing table within Table I of Appendix A of Standard No. 109. RMA also petitioned on December 4, for the addition of three other tire sizes to existing tables in Table I. Further, RMA petitioned on December 4, for the addition of a new table to Table I, and requested that this new table list two tire sizes. Michelin petitioned for the addition of two new tires sizes to an existing table on November 7, 1979. On November 26, Michelin petitioned for the establishment of a new table to Table I, and that this table include a new tire size. The bases for accepting or denying requests to add new tire size designations are set forth in the introductory guidelines to Appendix A. Briefly, the tests are the appropriateness of the information submitted for inclusion in the tire tables, and the appropriateness of the requested location within the tables of the requested tire sizes. The eight new tire size designations requested to be added to Standard No. 109 appear to meet these criteria. Accordingly, the RMA and Michelin petitions are granted, and eight new tire sizes are added to Table I of Appendix A of the Standard pursuant to the abbreviated rulemaking procedure.

In consideration of the foregoing, 49 CFR § 571.109 is amended as specified below, subject to the 30 day comment period outlined above:

§ 571.109 *New Pneumatic Tires—Passenger Cars* (Appendix amended)

1. Tables I-KK, I-RR, and I-WW are amended by adding the following new tire size designations and corresponding values:

TABLE I-KK

TIRE LOAD RATING, TEST RIMS, MINIMUM SIZE FACTORS AND SECTION WIDTHS FOR "P/60" SERIES ISO TYPE TIRES

Tire size designation [1]	Maximum tire loads (kilograms) at various cold inflation pressures (kPa)									Test rim width (inches)	Minimum size factor (mm)	Section [2] width (mm)
	120	140	160	180	200	220	240	260	280			
P265/60 R 15	645	695	745	790	835	875	915	950	985	7	943	262

[1] The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to the "R".
[2] Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I-RR

TIRE LOAD RATING, TEST RIMS, MINIMUM SIZE FACTORS AND SECTION WIDTHS FOR "P/65" SERIES ISO TYPE TIRES
ALL MILLIMETRIC FOR TR OR JM RIMS

Tire size designation [2]	Maximum tire loads (kilograms) at various cold inflation pressures (kPa) [1]									Test rim width (mm)	Minimum size factor (mm)	Section [3] width (mm)
	120	140	160	180	200	220	240	260	280			
P195/65 R 365	400	430	460	490	515	540	565			135	800	194
P225/65 R 39	535	575	615	655	690	720	755			165	894	228

[1] The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to the "R".
[2] Actual section width and overall width shall not exceed the specified section width by more than 7 percent.
[3] The letter "D" for diagonal and "B" for bias-belted may be used in place of the "R"

TABLE I-WW

TIRE LOAD RATING, TEST RIMS, MINIMUM SIZE FACTORS AND SECTION WIDTHS FOR "P/65" SERIES ISO TYPE TIRES

Tire size designation [1]	Maximum tire loads (kilograms) at various cold inflation pressures (kPa)									Test rim width (inches)	Minimum size factor (mm)	Section [2] width (mm)
	120	140	160	180	200	220	240	260	280			
P195/65 R 13	375	400	430	455	480	505	525	550	570	5½	767	196
P205/65 R 14	425	460	495	525	550	580	605	630	655	5½	811	203
P255/65 R 15	650	705	750	795	840	880	920	960	995	7	950	255

[1] The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to the "R".
[2] Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

2. Two new tables, Table I-XX and I-YY, are added to Table I of Appendix A to read as set forth below:

TABLE I-XX

TIRE LOAD RATING, TEST RIMS, MINIMUM SIZE FACTORS AND SECTION WIDTHS FOR "P/70" SERIES ISO TYPE TIRES
ALL MILLIMETRIC FOR TR OR JM RIMS

Tire size designation [2]	Maximum tire loads (kilograms) at various cold inflation pressures (kPa) [1]									Test rim width (mm)	Minimum size factor (mm)	Section [3] width (mm)
	120	140	160	180	200	220	240	260	280			
P165/70 R 365	325	350	375	395	420	440	460			120	752	167

[1] The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to the "R".
[2] Actual section width and overall width shall not exceed the specified section width by more than 7 percent.
[3] The letter "D" for diagonal and "B" for bias-belted may be used in place of the "R".

TABLE I-YY

TIRE LOAD RATING, TEST RIMS, MINIMUM SIZE FACTORS AND SECTION WIDTHS FOR "P/55" SERIES ISO TYPE TIRES

Tire size designation [1]	Maximum tire loads (kilograms) at various cold inflation pressures (kPa)									Test rim width (inches)	Minimum size factor (mm)	Section [2] width (mm)
	120	140	160	180	200	220	240	260	280			
P255/55 R 14	535	575	615	655	690	725	755	785	815	7	875	255
P255/55 R 15	560	605	645	685	720	755	790	825	855	7	900	255

[1] The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to the "R".
[2] Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

Interested persons are invited to submit comments on these additions. Comments must be limited so as not to exceed 15 pages in length. Necessary attachments may be appended without regard to the 15 page limit. This limitation is intended to encourage commenters to detail their primary comments in a concise fashion. Those persons desiring to be notified upon receipt of their comments in the rules docket should enclose a self-addressed, stamped postcard in the envelope with their comments. Upon receiving the comments, the docket supervisor will return the postcard by mail.

The agency has reviewed the impacts of this rule, and determined that permitting the introduction of these tire sizes will benefit those manufacturers desiring to produce the sizes and will have no effect on those manufacturers who do not. The public will be minimally affected by this rule. Accordingly, NHTSA has determined that this is not a significant regulation within the meaning of Executive Order 12044.

The program official and attorney principally responsible for the development of this rule are John Diehl and Stephen Kratzke, respectively.

Issued on February 11, 1980.

Michael M. Finkelstein
Associate Administrator
for Rulemaking

45 F.R. 10798
February 19, 1980

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 80-01; Notice 3)

ACTION: Final rule.

SUMMARY: Pursuant to petitions by the Japan Automobile Tire Manufacturers Association (JATMA), Michelin Tire Corporation (Michelin), and the Rubber Manufacturers Association (RMA), this notice amends Federal Motor Vehicle Safety Standard No. 109, *New Pneumatic Tires—Passenger Cars,* by adding certain tire size designations to Appendix A of that standard. This notice also corrects some dimensions for a tire size in which RMA calculated those dimensions using the wrong test rim width. This amendment permits the introduction into interstate commerce of the new tire sizes.

EFFECTIVE DATE: 30 days from the date of publication in the *Federal Register,* if objections are not received before that date.

ADDRESS: Comments should refer to Docket No. 80-01 and be submitted to Docket Section, Room 5108, 400 Seventh Street, S.W., Washington, D.C. 20590. (Docket hours are 8 a.m. to 4 p.m. Monday through Friday.)

FOR FURTHER INFORMATION CONTACT:

Office of Automotive Ratings, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590 (202-426-0852).

SUPPLEMENTARY INFORMATION: According to agency practice, the National Highway Traffic Safety Administration (NHTSA) responds to petitions for adding new tire sizes to Table I of Appendix A of Standard No. 109 by quarterly issuing final rules under an abbreviated rulemaking procedure for expediting such routine amendments. Guidelines for this procedure were published at 33 FR 14964; October 5, 1968, and amended at 36 FR 8298; May 4, 1971; 36 FR 13601; July 22, 1971; and 39 FR 28990; August 13, 1974. Those guidelines provide that these final rules become effective 30 days after their date of publication in the *Federal Register* if no comments objecting to them are received by NHTSA during this 30-day period. If objections are received, regular rulemaking procedures for issuing and amending motor vehicle safety standards are initiated.

On May 19, 1980, JATMA petitioned for the addition of a tire size to an existing table within Table I of Appendix A of Standard No. 109. On June 25, 1980, Michelin petitioned for the addition of two new tire sizes to an existing table. RMA petitioned for the addition of four new tire sizes to existing tables on May 27, June 6, July 10, and July 14. Additionally, RMA filed a petition requesting changes to the physical dimensions published for a tire size, because RMA had erroneously calculated those dimensions using the wrong test rim width.

The bases for accepting or denying requests to add new tire size designations to the tire tables are set forth in the introductory guidelines to Appendix A. Briefly, the tests are the appropriateness of the information submitted for inclusion in the tire tables and the appropriateness of the location within the tables of the requested tire size. The seven new tire size designations requested to be added to Standard No. 109 appear to meet these criteria. Accordingly, the JATMA, Michelin, and RMA petitions are granted, and seven new tire sizes are added to Table I of Appendix A of the Standard pursuant to the abbreviated rulemaking procedures. Additionally, the RMA request to correct the physical dimensions for a previously published tire size is granted, and the correction is made.

In consideration of the foregoing, 49 CFR § 571.109 is amended as specified below, subject to the 30-day comment period outlined above.

§ 571.109 New Pneumatic Tires—Passenger Cars (Appendix amended)

1. Tables I-K, I-T, I-KK, I-QQ, and I-WW are amended by adding the following new tire size designations and corresponding values:

2. Table I-LL is amended, with the following values substituted for the T155/D9016 tire size:

TABLE I–LL

TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR "T SERIES" 60 LB/IN [2] TIRES

Tire size designation [1]	Maximum tire loads (pounds at 60 p.s.i. cold inflation pressure)	Test rim width (inches)	Minimum size factor (inches)	Section width [2] (inches)
	60 p.s.i.			
T155/D 9016	2,335 lbs.	4	32.48	5.98

Interested persons are invited to submit comments on these additions. Comments must be limited so as not to exceed 15 pages in length. Necessary attachments may be appended without regard to the 15 page limit. This limitation is intended to encourage commenters to detail their primary arguments in a concise fashion. Those persons desiring to be notified upon receipt of their comments in the rules docket should enclose a self-addressed, stamped postcard in the envelope with their comments. When the comments are received, the docket supervisor will return the post card by mail.

The agency has reviewed the impacts of this rule and determined that permitting the introduction of these tire sizes will benefit those manufacturers desiring to produce these sizes, and will have no effect on those manufacturers who do not. The public will be minimally affected by this rule. Accordingly, NHTSA has determined that this is not a significant regulation within the meaning of Executive Order 12044.

Issued on September 8, 1980.

Michael M. Finkelstein
Associate Administrator

45 F.R. 62083
September 18, 1980

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 109

Safety Standards for New Pneumatic Tires

[Docket No. 80-14; Notice 7]
[Docket No. 71-18; Notice 12]

ACTION: Technical amendment.

SUMMARY: In this agency's safety standards applicable to new pneumatic tires for use on motor vehicles, there are listings of standardization organizations whose publications of specifications are accepted under the standards as means for determining appropriate rim sizes on which to mount the tires during testing, and for providing other technical data. This agency has received two petitions requesting changes to these listings. The Society of Motor Manufacturers & Traders Ltd. (SMMT) stated that they no longer set or maintain standards for new tires, and that those functions are now handled for the group by the British Standards Institution, a group already listed in both new tire standards. SMMT requested that their name be deleted from the list of standardization organizations in the new tire standards. Japan Automobile Tire Manufacturers' Association, Inc. (JATMA) asked that the name of the Japanese group currently listed in the standard for new tires for use on motor vehicles other than passenger cars be deleted, because that group does not issue specific tire standards. JATMA, which does issue such standards, asked that its name be added to the list of standardization organizations. This notice makes the changes requested by these petitions. Additionally, this notice corrects an error in the name of the German standardization organization in the passenger car tire standard.

DATE: This amendment is effective June 6, 1983.

SUPPLEMENTARY INFORMATION: Section S4.4.1(b) of Standard No. 109, *New Pneumatic Tires—Passenger Cars* (49 CFR § 571.109), and section S5.1(b) of Standard No. 119, *New Pneumatic Tires for Motor Vehicles Other Than Passenger Cars* (49 CFR § 571.119), both contain listings of the various standardization organizations. A standardization organization is a voluntary association composed of representatives of each of the member tire companies. The purpose of a standardization organization is to establish and promulgate engineering standards for tires, rims, and their allied parts. NHTSA relies on the standardization organizations to list the acceptable rim sizes for each tire size and for certain technical information regarding the tire sizes.

Two petitions recently submitted to the agency indicate that these listings of standardization organizations need to be updated in order to reflect the current status of standardization activities. In the first petition, SMMT stated that it no longer performs any of the tasks associated with standardization organizations, and that those activities are now performed for SMMT by the British Standards Institution, a group already listed in both standards. Accordingly, SMMT requested that its name be deleted from the list of standardization organizations.

In the second petition, JATMA noted that the group currently listed in Standard No. 119 as the Japanese standardization organization is Japanese Industrial Standards. JATMA noted that that organization is an organization for all Japanese industries, not just the Japanese tire industry, and does not currently perform the functions associated with a standardization organization. JATMA does perform those functions, and is so recognized in Standard No. 109, which no longer lists Japanese

Industrial Standards. JATMA requested that Standard No. 119's list of standardization organizations be amended to correspond to the listing in Standard No. 109 with regard to the Japanese standardization organization.

Both of these petitions are granted. Additionally, the agency erroneously listed the German standardization organization as the Deutsches Institut fur Norming in its response to the petitions for reconsideration of the final rule deleting the tire tables from Standard No. 109 (47 FR 36180; August 19, 1982). The correct name for that organization, and the name which has been used in all previous agency rulemaking notices referring to that standardization organization, is Deutsche Industrie Norm. The correct name is substituted in Standard No. 109 by this amendment.

These changes represent only technical corrections to the agency's listing of recognized standardization organizations. They impose no obligations on any party, but only accommodate the wishes of the listed organizations or correct an error by this agency. Accordingly, the agency finds for good cause that notice and opportunity for comment are unnecessary, and these changes are effective as soon as this notice is published.

In consideration of the foregoing, section S4.4.1(b) of 49 CFR § 571.109 and section S5.1(b) of 49 CFR § 571.119 are revised to read as follows:

* * * * *

(b) Contained in publications, current at the date of manufacture of the tire or any later date, of at least one of the following organizations:

The Tire and Rim Association
The European Tyre and Rim Technical Organisation
Japan Automobile Tire Manufacturers' Association, Inc.
Deutche Industrie Norm
British Standards Institution
Scandanavian Tire and Rim Organization

* * * * *

Issued on May 27, 1983

Diane K. Steed,
Acting Administrator.

48 F.R. 25209
June 6, 1983

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

[Docket No. 85-03; Notice 1]

ACTION: Technical amendment. Correction of Error in Code of Federal Regulations.

SUMMARY: This agency has discovered an error in Title 49 of the Code of Federal Regulations relating to two of the tables following Standard No. 109, *New Pneumatic Tires—Passenger Cars.* This notice corrects that error. The correct version of these tables has previously appeared in the Federal Register, so no new obligations or requirements are imposed on any party as a result of this correction.

EFFECTIVE DATE: March 19, 1985.

SUPPLEMENTARY INFORMATION: Standard No. 109, *New Pneumatic Tires—Passenger Cars* (49 CFR §571.109) sets forth a number of performance and labeling requirements which must be satisfied by each new tire for use on passenger cars manufactured after 1948. One of the requirements which those tires must meet is a strength test. Section S4.2.2.4 specifies that each tire shall meet the requirements for minimum breaking energy specified in Table I.

With the introduction of temporary spare tires in the mid-70's, NHTSA published a final rule adding tables specifying the minimum breaking energy for these new tires at 42 FR 12869, March 7, 1977. These tables specified that those tires with a maximum load rating of 880 pounds and above had to have a higher minimum breaking energy than tires with a maximum load rating below 880 pounds. However, the version of these tables published in the Code of Federal Regulations has the respective minimum breaking energy values transposed, so that it appears that the tires with the lower maximum load rating must have the higher breaking energy. This notice corrects that error.

Publication of the correct version of these requirements imposes no duties or obligations on any party, nor does it alter existing obligations. The agency has always used the correct version of these requirements for the purposes of its compliance testing, and the correct version of these requirements was published in the Federal Register. This notice simply ensures that the public will have a correct copy of the requirements of Standard No. 109. Accordingly, the NHTSA finds for good cause that notice and opportunity for comment on this correction are unnecessary, and the correction is effective as soon as this notice is published.

In consideration of the foregoing, 49 CFR §571.109 is amended as follows:

1. Table I-D in Appendix A of §571.109 is revised to read as follows:

TABLE I-D—FOR TIRES WITH 60 LB/IN^2 MAXIMUM PERMISSIBLE INFLATION PRESSURE AND MAXIMUM LOAD RATING OF 880 LB AND ABOVE

Cord Material	Inch pounds
Rayon	1,650
Nylon or polyester	2,600

2. Table I-E in Appendix A of §571.109 is revised to read as follows:

TABLE I-E—FOR TIRES WITH 60 LB/IN^2 MAXIMUM PERMISSIBLE INFLATION PRESSURE AND MAXIMUM LOAD RATING BELOW 880 LB

Cord Material	Inch pounds
Rayon	1,000
Nylon or polyester	1,950

Issued on March 13, 1985.

Diane K. Steed
Administrator

50 FR 10968
March 19, 1985

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 85-09; Notice 02)

ACTION: Final rule.

SUMMARY: This notice amends Federal Motor Vehicle Safety Standard (FMVSS) No. 109, *New Pneumatic Tires—Passenger Cars,* to delete paragraph S4.2.2.2(b) of the standard. Paragraph S4.2.2.2(b) imposes a size factor dimensional requirement on tires manufactured for passenger cars. The agency has concluded that the size factor requirement provides no safety benefits, and that removing that requirement relieves an unnecessary restriction on tire manufacturers.

EFFECTIVE DATE: May 5, 1986.

SUPPLEMENTARY INFORMATION: Federal Motor Vehicle Safety Standard (FMVSS) No. 109, *New Pneumatic Tires—Passenger Cars.* 49 CFR 571.109, specifies the requirements for all tires manufactured for use on passenger cars manufactured after 1948. Under that safety standard, tires must meet specified dimensional, strength, resistance to bead unseating, endurance, and high speed requirements, and be labeled with certain safety information.

The European Tyre and Rim Technical Organisation (ETRTO) petitioned NHTSA to amend Standard No. 109 to delete the size factor requirement in paragraph S4.2.2.2(b). "Size factor" is defined in paragraph S3 of the standard as "the sum of the section width and the outer diameter of a tire determined on the test rim." The basis for ETRTO's request was that size factor provides no safety benefits and should be deleted for the same reasons stated by the agency for deleting the minimum size factor requirement. (*See,* 46 FR 61473, December 17, 1981; 47 FR 36180; August 19, 1982.) NHTSA tentatively agreed that the size factor dimensional requirement provides no safety benefits and issued a notice on July 12, 1985 (50 FR 28426), granting ETRTO's petition and proposing to delete the size factor requirement.

Background

A rule published in December 1981, deleted an informational table (referred to as "Table 1") that had been included in FMVSS No. 109 to list dimensional and loading information for all passenger car tire sizes, including dimensional specifications for "minimum size factor." The information had been used by the agency for testing tires for compliance with FMVSS No. 109 and for determining the appropriateness of the tires used on particular vehicles, in accordance with FMVSS No. 110, *Tire Selection and Rims.* NHTSA determined that retaining Table 1 was not necessary because the required specifications for compliance testing could be determined from the information labeled on the sidewall of the tires, and because no safety-related justifications for keeping the table were found to exist.

In deleting Table 1 from Standard No. 109, NHTSA intended to reduce unnecessary paperwork burdens for manufacturers and facilitate the introduction of new technology in tires, and thus amended the standard's requirements for tire sizes and load factors to reference publications of private standards groups. Commenters to the NPRM on this action had requested the agency to delete the dimensional requirements of Standard No. 109 in its final rule, but NHTSA determined that those requests could not be considered since the public was not given an opportunity to comment on such a change. NHTSA thus issued the final rule which amended S4.2.2.2 to simply delete reference to Table 1 and instead include the new references to the private publications.

Since dimensional requirements were being retained in S4.2.2.2, several commenters were concerned that some of the standardization organizations do not publish the size factor dimension. NHTSA addressed this concern by explaining that all yearbooks specify a tire's overall diameter and section width, and that added together, those dimensions equal the size factor. However, when Table 1 was deleted from Standard No. 109, NHTSA

should have distinguished between specifications referring to "size factor" and those which had referred previously to "minimum size factor." As explained below, this oversight resulted in an unintended removal of dimensional tolerances previously permitted by the standard.

Size factor

Prior to the deletion of Table 1, paragraph S4.2.2.2(b) of the standard had required that a tire's size factor be *at least as large* as the size factor provided by the table. Accordingly, a "minimum size factor" was specified in Table 1 for each tire size designation. The minimum size factor for a particular tire size was always less than the size factor of that tire. A tire could meet the size factor dimensional requirement of FMVSS No. 109 when its size factor was equal to on greater than the size factor provided by Table 1 for its size designation. (For example, according to data from the 1982 Tire and Rim Association Yearbook, the size factor for the tire listed as P195/75R14 is 33.23 inches, while its minimum size factor is calculated as 32.64 inches.)

When the agency deleted Table 1, NHTSA removed Standard No. 109's listing of minimum size factors for tire sizes. NHTSA determined that the requirement was no longer necessary because manufacturers would not undersize their tires absent such a requirement. The agency amended the standard to require that a tire's size factor be at least as large as that specified in a submission made by an individual manufacturer to NHTSA, pursuant to the requirements of paragraph S4.4.1(a) of the standard, or in one of the standardization organization's publications described in S4.4.1(b), for the tire's size designation and type. However, since size factor is simply the sum of the section width and the outer diameter of a tire and is actually a design goal, the unintended effect of specifying that a tire's size factor be "at least as large as" that specified in a publication or yearbook was to revise S4.2.2.2(b) to remove the dimensional tolerances previously permitted by the minimum size factors provided in Table 1.

ETRTO's petition

When the agency denied petitions for reconsideration of its decision to delete the minimum size factor requirement, NHTSA reiterated its conclusion that such a requirement was not needed in Standard No. 109. (47 FR at 36181). ETRTO subsequently petitioned the agency to delete or amend S4.2.2.2(b) to accord with NHTSA's determination that a dimensional requirement for tire size factor was unnecessary and "to avoid any confusion" regarding that matter. NHTSA granted the petition and issued an NPRM proposing to remove paragraph S4.2.2.2(b) from Standard No. 109 and the definition of "size factor" from paragraph S3 (50 FR 28426; July 12, 1985).

The July 1985 NPRM explained that the size factor requirement should be deleted for the same reasons that minimum size factor was deleted. As explained in that notice, the agency tentatively determined that there were no safety benefits to retaining the size factor requirement since it would be implausible that tire manufacturers would either intentionally or inadvertently undersize their passenger car tires, due to the engineering and quality control efforts that are involved in designing and producing new tire sizes. First, the size factor of a tire cannot be changed after the mold is set up to produce that tire size. Second, tire manufacturers are required to certify that their tires can carry 100 percent of its maximum load at a speed of 50 miles per hour for 24 hours. Undersized tires would be overloaded and would predictably have a high failure rate during this test, which would alert tire manufacturers and NHTSA to any undersizing. Further, product liability awards and negative publicity would more than offset the few dollars saved by undersizing, and would serve as compelling disincentives to manufacturers. Finally, NHTSA believed that the size factor requirement was unnecessary because the absence of such a requirement in Safety Standard No. 119, which applies to tires for use on all motor vehicles other than passenger cars, had not created any problems. Accordingly, since NHTSA believed that tire manufacturers would not intentionally or inadvertently produce a tire which was smaller than the size labelled on the sidewall, the agency proposed to delete the size factor requirement as a means of relieving an unnecessary restriction on tire manufacturers.

Comments

The agency received four comments on the proposal. Ford agreed that the size factor requirement provides no safety benefits and should therefore be deleted from Standard No. 109, while Volkswagen, BMW, and Daimler-Benz AG (Mercedes-Benz) opposed the proposal.

Volkswagen (VW) argued that deleting the size factor requirement would eliminate one of the last constraints on tire manufacturers. VW cited examples of identical tires being marked with different

sizes due to the overlap between maximum and minimum dimensions. That company believed that the performance requirements of Standard No. 109 do not represent a safeguard against undersizing of tire section width, so that tire manufacturers could continue to designate a tire in different ways which can enable them to charge unjustified premiums for certain tires marked with larger sizes. VW suggested NHTSA adopt lower tolerance limits for tire section width.

In response to this comment, NHTSA believes that motor vehicle manufacturers must use their own expertise in tire selection to comply with both FMVSS No. 109 and FMVSS No. 110. The practices of some tire manufacturers to supply identical tires at different prices is one which can occur regardless of the size factor requirement in Standard No. 109. Since there are means available to motor vehicle manufacturers to guard against those types of actions, NHTSA has concluded that VW has not provided a sufficient basis for retaining the size factor requirement.

BMW believed that the agency should not limit its consideration of undersized tires to tire strength and durability. BMW urged NHTSA to consider that tire size affects drivability, braking and steering, and is dependent on wheelwell clearances, and that tire revolutions per mile affect speedometer and odometer accuracy, noise and exhaust emission and fuel economy. That commenter also believed that a minimum dimensional requirement is necessary in light of the use of aftermarket tires, and that, given the entry of other countries into tire production, "compliance with some existing voluntary size standard could become a nebulous quantity."

NHTSA agrees that the factors cited by BMW can be affected by tire size. However, the agency believes that the effect, if any, would not be significant. Further, there is no reason to believe that manufacturers will produce tires which do not accord with their labeled sizes.

In their petitions for reconsideration of NHTSA's decision to remove the minimum size factor requirement, commenters argued that, absent a minimum size factor requirement, it would be possible for manufacturers to undersize their tires. The agency did not agree that manufacturers will undersize their tires absent a minimum size factor requirement, and explained its decision in the following manner:

> The size factor of a tire cannot change after the mold is set up to begin producing that size of tire. With all of the engineering and quality control effort involved in designing and producing new tire sizes, it is simply implausible that a tire manufacturer would either intentionally or inadvertently undersize the molds. The undersized tires that would be produced might save the manufacturers a few dollars per tire, but the savings would be more than offset by product liability awards and negative publicity generated. Since automobile manufacturers design cars to a tire's rated load, undersized tires would be overloaded on those cars, and would predictably exhibit higher failure rates than properly sized tires made by other manufacturers. This appears to be a very compelling disincentive to undersizing tires. Hence, the agency concludes that the minimum size factor is not needed in Standard No. 109. (47 FR at 36181; August 19, 1982.)

The agency has concluded that the rationale against undersizing is still valid. Therefore, NHTSA does not agree with BMW that tire undersizing by after-market or foreign tire manufacturers might occur absent a size factor requirement.

Daimler-Benz AG (DBAG) agreed with NHTSA that it is highly improbable that tires with insufficient load carrying capacities will be produced, even in the absence of a size factor requirement. However, that company believed that future tires will have less width than current tires if the size factor requirement were deleted. Although DBAG acknowledged that this might not necessarily result in a direct safety hazard with respect to tire strength and endurance, that commenter was concerned about decreases in tire width. DBAG believed that, since the wheelwell spaces have to be determined on the basis of the largest possible dimensions of the designated tire size, narrower tires in set wheelwells might not be esthetically pleasing to customers. Customers might therefore replace their original tires with larger sizes which could interfere with the surrounding body and suspension parts. DBAG was also concerned that customer cost and dissatisfaction could increase if smaller tires were produced, since smaller tires tend to wear more rapidly.

NHTSA does not agree that customers will purchase tires that are oversized for their vehicles. FMVSS No. 110 requires that consumers be informed of recommended tire sizes for their vehicles, to ensure that existing tires are not replaced with tires of sizes not recommended for a particular vehicle. Further, the agency believes that tire dealers will exercise great care in order to avoid tort liability for selling incompatible tires.

NHTSA has concluded that the size factor requirement in Standard No. 109 provides no safety benefits. The agency has concluded that removing size factor not only relieves an unnecessary restriction on tire manufacturers but also recognizes that mass-produced products have some minor product-to-product variations, and that these variations can be perfectly acceptable. Therefore, NHTSA is amending FMVSS No. 109 to delete S4.2.2.2(b), and the definition of "size factor" from paragraph S3.

Effective date

The changes to Standard No. 109 described herein are effective upon publication of this rule in the *FEDERAL REGISTER*. These changes relieve a restriction on tire manufacture which the agency has determined to be unnecessary. The revisions to the standard do not specify different test procedures or additional requirements, and no leadtime for preparation by tire or vehicle manufacturers is required. NHTSA therefore finds good cause for making these changes effective upon publication of this final rule in the *Federal Register*.

In consideration of the foregoing, 49 CFR Part 571 is amended as follows:

1. Paragraph S3 is amended by removing the following paragraph:

"Size Factor" means the sum of the section width and the outer diameter of a tire determined on the test rim.

2. Paragraph S4.2.2.2 is amended by revising it to read as follows:

S4.2.2.2 Physical Dimensions. The actual section width and overall width for each tire measured in accordance with S5.1, shall not exceed the section width specified in a submission made by an individual manufacturer, pursuant to S4.4.1(a) or in one of the publications described in S4.4.1(b) for its size designation and type by more than:

(1) (For tires with a maximum permissible inflation pressure of 32, 36, or 40 psi) 7 percent, or

(2) (For tires with a maximum permissible inflation pressure of 60 psi or 240, 280, or 300kPa) 7 percent or 0.4 inch, whichever is larger.

Issued on: April 29, 1986

Diane K. Steed
Administrator

51 F.R. 16517
May 5, 1986

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires
(Docket 88-04; Notice 2)

ACTION: Final rule

SUMMARY: This notice amends Standard No. 109, *New Pneumatic Tires,* to include an additional maximum inflation pressure, 340 kPa, in the Standard. Before the effective date of this rule, the Standard requires that the maximum permissible inflation pressure for each tire must be either 32, 36, 40 or 60 psi, or 240, 280 or 300 kPa. The European Tyre and Rim Technical Organization (E.T.R.T.O.) submitted a petition for rulemaking requesting the inclusion of the 340 kPa pressure. After evaluating the petition and comments on the proposal, NHTSA has decided to include 340 kPa as a permissible inflation pressure.

EFFECTIVE DATE: June 20, 1988

SUPPLEMENTARY INFORMATION: Until the effective date of this rule, Standard No. 109, *New Pneumatic Tires,* requires that the maximum permissible inflation pressure for each tire must be 32, 36, 40 or 60 psi, or 240, 280 or 300 kPa. The standard specifies differing test criteria depending upon the maximum permissible inflation pressure.

The European Tyre and Rim Technical Organization (E.T.R.T.O.) submitted a petition for rulemaking requesting the inclusion of an additional inflation pressure, 340 kPa, in Standard No. 109. The petitioner stated that its members are receiving requests with increasing frequency from vehicle manufacturers for reinforced tires at an inflation pressure higher than 300 kPa, for purposes of safety and optimum vehicle handling. The requests for these tires are primarily for station wagons. E.T.R.T.O. requested that a pressure of 340 kPa be added, so that the standard inflation pressure for reinforced tires (280 kPa) can be increased for special performance requirements with no increase in tire load capacity.

On January 18, 1988, NHTSA published a notice of proposed rulemaking to allow a new maximum permissible tire inflation pressure. (53 FR 936.) NHTSA addressed petitions raising almost identical issues in 1978. As discussed in the January 18, proposal, the 300 kPa maximum pressure for non-reinforced tires was added to the standard in response to those petitions. The relationship of the 300 kPa non-reinforced tire to the standard inflation pressure (240 kPa) non-reinforced tire is analogous to that of the 340 kPa reinforced tire to the 280 kPa reinforced tire. Thus, NHTSA tentatively concluded that the 340 kPa tire pressure should be added to Standard No. 109 for the same reasons the 300 kPa pressure was added. The agency explained its reason in detail in the January 18 proposal.

The agency received comments from Chrysler Motors Corporation, General Motors Corporation, General Tire, and Volkswagen of America. Each commenter endorsed the proposal. NHTSA is adopting the proposed changes for the reasons expressed in the proposal.

Further, the agency is issuing a conforming amendment to Table 1, 49 CFR 575.104, *Uniform Tire Quality Grading Standards,* to set out the 340 kPa maximum permissible inflation pressure. The agency inadvertently neglected to propose the Table 1 amendment when NHTSA issued the proposed rule. Without such an amendment, NHTSA could not conduct compliance testing for UTQGS of tires with a 340 kPa maximum inflation pressure. The agency finds that there is good cause for amending Table 1 without notice and comment because the amendment adds no new substantive requirement for tires with a 340 kPa maximum inflation pressure.

The agency finds that there is good cause for making this final rule effective in less than 180 days because the amendment relieves a restriction, and permits the sale of tires that can provide better performance without any negative impact on safety.

Impact Assessments

The agency has analyzed this proposal and determined that it is neither "major" within the meaning of Executive Order 12291, nor "significant" within the meaning of the Department of Transportation's regulatory policies and procedures. The amendments do not impose new requirements for current tires, but instead permit a new category of tire. Since the new tires can provide better performance, the amendments will result in consumer benefits.

In accordance with the Regulatory Flexibility Act, NHTSA has evaluated the effects of this action on

small entities. I certify that this final rule will not have a significant economic impact on a substantial number of small entities. The agency believes that few of the tire manufacturers qualify as small businesses. Any tire manufacturers that do qualify as small businesses might benefit to a small extent by being permitted to produce these new tires. Small non-profit organizations and small governmental units are affected by the final rule only to the extent that they purchase motor vehicles. These small entities may benefit to a small extent if they purchase vehicles with these new tires.

The agency has analyzed this action under principles and criteria of Executive Order 12612, and has determined that this final rule does not have sufficient Federalism implications to warrant preparing a Federalism Assessment.

Finally, the agency has considered the environmental implications of this proposed rule in accordance with the National Environmental Policy Act of 1969 and determined that the rule does not have any significant impact on the human environment.

PART 571—[AMENDED]

In consideration of the foregoing, 49 CFR Parts 571 and 575 are amended as follows:

Section 571.109 [Amended]

S4.2.1(b) is revised to read as follows:

(b) Its maximum permissible inflation pressure shall be either 32, 36, 40 or 60 psi, or 240, 280, 300 or 340 kPa.

S4.2.2.2 is revised to read as follows:

S4.2.2.2 *Physical dimensions.* The actual section width and overall width for each tire measured in accordance with S5.1, shall not exceed the section width specified in a submission made by an individual manufacturer, pursuant to S4.4.1(a) or in one of the publications described in S4.4.1(b) for its size designation and type by more than:

(1) (For tires with a maximum permissible inflation pressure of 32, 36, or 40 psi) 7 percent, or

(2) (For tires with a maximum permissible inflation pressure of 60 psi or 240, 280, 300, or 340 kPa) 7 percent or 0.4 inch, whichever is larger.

S4.3.4 is revised to read as follows:

S4.3.4 If the maximum inflation pressure of a tire is 240, 280, 300, or 340 kPa, then:

(a) Each marking of that inflation pressure pursuant to S4.3(b) shall be followed in parenthesis by the equivalent inflation pressure in psi, rounded to the next higher whole number; and

(b) Each marking of the tire's maximum load rating pursuant to S4.3(c) in kilograms shall be followed in parenthesis by the equivalent load rating in pounds, rounded to the nearest whole number.

Tables I-A, I-B and I-C of Appendix A are revised to read as follows:

Table II of Appendix A is revised to read as follows:

Table 1 of PART 575 is amended to read as follows:

571.109—Appendix A

Table I-A For Bias Ply Tires With Designated Section Width of 6 Inches and Above

Cord Material	Maximum permissible inflation						
	32 lb/in²	36 lb/in²	40 lb/in²	240 kPa	280 kPa	300 kPa	340 kPa
Rayon (in-lbs)	1,650	2,574	3,300	1,650	3,300	1,650	3,300
Nylon or polyester (in-lbs)	2,600	3,900	5,200	2,600	5,200	2,600	5,200

571.109—Appendix A

Table I-B For Bias Ply Tires With Designated Section Width Below 6 Inches

Cord Material	Maximum permissible inflation						
	32 lb/in²	36 lb/in²	40 lb/in²	240 kPa	280 kPa	300 kPa	340 kPa
Rayon (in-lbs).....	1,000	1,875	2,500	1,000	2,500	1,000	2,500
Nylon or polyester (in-lbs)...	1,950	2,925	3,900	1,950	3,900	1,950	3,900

571.109—Appendix A

Table I-C For Radial Ply Tires

Size Designation	Maximum permissible inflation						
	32 lb/in²	36 lb/in²	40 lb/in²	240 kPa	280 kPa	300 kPa	340 kPa
Below 160 mm (in-lbs).....	1,950	2,925	3,900	1,950	3,900	1,950	3,900
160 mm or above (in-lbs)....	2,600	3,900	5,200	2,600	5,200	2,600	5,200

571.109—Appendix A

Table II—Test Inflation Pressures

Maximum permissible inflation pressure	32 lb/in²	36 lb/in²	40 lb/in²	60 lb/in²	240 kPa	280 kPa	300 kPa	340 kPa
Pressure to be used in tests for physical dimensions, bead unseating, tire strength, and tire endurance	24	28	32	52	180	220	180	220
Pressure to be used in test for high-speed performance	30	34	38	59	220	260	220	260

Issued on May 11, 1988

Diane K. Steed
Administrator

53 F.R. 17950
May 19, 1988

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 109

Tire Selection and Rims for Motor Vehicles Other Than Passenger Cars (Docket No. 89-14; Notice 1) RIN: 2127-AD20

ACTION: Technical Amendment.

SUMMARY: In response to a petition by the Tyre and Rim Association of Australia (TRAA), this notice amends Standard No. 109, Standard No. 119, and Standard No. 120 to include the TRAA in the list of standardization organizations. In addition, this notice corrects an oversight in an earlier technical amendment. Because these changes represent only technical corrections to the agency's listing of recognized standardization organizations and impose no obligations on any party, the agency finds for good cause that notice and opportunity for comment are unnecessary.

EFFECTIVE DATE: September 18, 1989.

SUPPLEMENTARY INFORMATION: Section S4.4.1(b) of Standard No. 109, *New Pneumatic Tires — Passenger Cars* and section S5.1(b) of Standard No. 119 (49 CFR 571.109), *New Pneumatic Tires for Motor Vehicles Other Than Passenger Cars* (49 CFR 571.119) each contain listings of various standardization organizations. Similarly, section S5.2(a) of Standard No. 120, *Tire Selection and Rims for Motor Vehicles Other Than Passenger Cars*, sets forth rim marking symbols related to the standardization organizations. A standardization organization is a voluntary association composed of representatives of member tire companies. The purpose of a standardization organization is to establish and promulgate engineering standards for tires, rims, and their allied parts. NHTSA relies on standardization organizations to list acceptable rim sizes for each tire size and for technical information regarding tire sizes.

The Tyre and Rim Association of Australia (TRAA) submitted a petition to NHTSA requesting that it be included in NHTSA's listing of standardization organizations in Standard No. 109 and Standard No. 119. TRAA also submitted its Articles of Incorporation.

NHTSA has decided to grant the petition and adopt the petitioner's request without affording an opportunity for public comment because these changes represent only technical corrections to the agency's listing of recognized standardization organizations. They impose no obligations on any party. Rather, they accommodate the wishes of the listed organization. Accordingly, the agency finds for good cause that notice and opportunity for comment are unnecessary, and these changes are effective as soon as this notice is published.

In addition, on June 6, 1983, NHTSA issued a similar technical amendment which intended to eliminate from the list of standardization organizations the Society of Motor Manufacturers & Traders Ltd. (SMMT) (48 FR 25209). It has come to the agency's attention that the 1983 notice deleted only some of the references to SMMT. That notice failed to delete references to SMMT in Appendix A, paragraph 4 of Standard No. 109 and section 5.2(a) of Standard No. 120. This notice eliminates these references. Because these technical corrections impose no obligations on any party, the agency finds for good cause that notice and opportunity for comment are unnecessary.

1. In consideration of the foregoing, section S4.4.1(b) of 49 CFR §571.109 is revised to read as follows:

(b) Contained in publications, current at the date of manufacture of the tire or any later date, of at least one of the following organizations:
The Tire and Rim Association
The European Tyre and Rim Technical Organisation
Japan Automobile Tire Manufacturers' Association, Inc.
Deutsche Industrie Norm
British Standards Institution
Scandinavian Tire and Rim Organization
The Tyre and Rim Association of Australia
* * * * *

2. Appendix A, paragraph 4 of 49 CFR § 571.109 is revised to read as follows:

4. A statement as to whether the tire size designation and load inflation schedule has been coordinated with the Tire and Rim Association, the European Tyre and Rim Technical Organisation, the Japan Automobile Tire Manufacturers' Association, Inc., the Deutsche Industrie Norm, the British Standards Institution, the Scandinavian Tire and Rim Organization, and the Tyre and Rim Association of Australia.
* * * * *

3. Section S 5.1(b) of 49 CFR § 571.119 is revised to read as follows:
* * * * *

(b) Contained in publications, current at the date of manufacture of the tire or any later date, of at least one of the following organizations:
The Tire and Rim Association
The European Tyre and Rim Technical Organisation
Japan Automobile Tire Manufacturers' Association, Inc.
Deutsche Industrie Norm
British Standards Institution
Scandinavian Tire and Rim Organization
The Tyre and Rim Association of Australia

* * * * *

4. Section S5.2(a) of 49 CFR § 571.120 is revised to read as follows:

* * * * *

(a) A designation which indicates the source of the rim's published nominal dimensions, as follows:
(1) "T" indicates The Tire and Rim Association.
(2) "E" indicates The European Tyre and Rim Technical Organisation
(3) "J" indicates Japan Automobile Tire Manufacturers' Association, Inc.
(4) "D" indicates Deutsche Industrie Norm.
(5) "B" indicates British Standards Institution.
(6) "S" indicates Scandinavian Tire and Rim Organization.
(7) "A" indicates The Tyre and Rim Association of Australia.
(8) "N" indicates an independent listing pursuant to S4.4.1(a) of Standard No. 109 or S5.1(a) of Standard No. 119.

* * * * *

Issued on: September 12, 1989

Jeffrey R. Miller
Acting Administrator

54 F.R. 38385
September 18, 1989

MOTOR VEHICLE SAFETY STANDARD NO. 109
New Pneumatic Tires—Passenger Cars

S1. Scope. This standard specifies tire dimensions and laboratory test requirements for bead unseating resistance, strength, endurance, and high-speed performance; defines tire load ratings; and specifies labeling requirements for passenger car tires.

S2. Application. This standard applies to new pneumatic tires for use on passenger cars manufactured after 1948. However, it does not apply to any tire which has been altered so as to render impossible its use, or its repair for use, as motor vehicle equipment.

S3. Definitions.

"Bead" means that part of the tire made of steel wires, wrapped or reinforced by ply cords, that is shaped to fit the rim.

"Bead separation" means a breakdown of bond between components in the bead area.

"Bias ply tire" means a pneumatic tire in which the ply cords that extend to the beads are laid at alternate angles substantially less than 90° to the centerline of the tread.

"Carcass" means the tire structure, except tread and sidewall rubber.

"Chunking" means the breaking away of pieces of the tread or sidewall.

"Cord" means the strands forming the plies in the tire.

"Cord separation" means cord parting away from adjacent rubber compounds.

"Cracking" means any parting within the tread, sidewall, or innerliner of the tire extending to cord material.

"Groove" means the space between two adjacent tread ribs.

"Innerliner" means the layer(s) forming the inside surface of a tubeless tire that contains the inflating medium within the tire.

"Innerliner separation" means the parting of the innerliner from cord material in the carcass.

"Load rating" means the maximum load a tire is rated to carry for a given inflation pressure.

"Maximum permissible inflation pressure" means the maximum cold inflation pressure to which a tire may be inflated.

"Maximum load rating" means the load rating at the maximum permissible inflation pressure for that tire.

"Open splice" means any parting at any junction of tread, sidewalls, or innerliner that extends to cord material.

"Overall width" means the linear distance between the exteriors of the sidewalls of an inflated tire, including elevations due to labeling, decorations, or protective bands or ribs.

"Ply" means a layer of rubber-coated parallel cords.

"Ply separation" means a parting of rubber compound between adjacent plies.

"Pneumatic tire" means a mechanical device made of rubber, chemicals, fabric and steel or other materials, which, when mounted on an automotive wheel, provides the traction and contains the gas or fluid that sustains the load.

"Radial ply tire" means a pneumatic tire in which the ply cords which extend to the beads are laid at substantially 90° to the centerline of the tread.

"Rim" means a metal support for a tire or a tire and tube assembly upon which the tire beads are seated.

"Section width" means the linear distance between the exteriors of the sidewalls of an inflated tire, excluding elevations due to labeling, decoration, or protective bands.

"Sidewall" means that portion of a tire between the tread and the bead.

"Sidewall separation" means the parting of the rubber compound from the cord material in the sidewall.

"Test rim" means, with reference to a tire to be tested, any rim that is listed as appropriate for use with that tire in accordance with S4.4. For purposes of this section and § 571.110 of this chapter, each rim listing shall include dimensional specifications and a diagram of the rim.

"Tread" means that portion of a tire that comes into contact with the road.

"Tread rib" means a tread section running circumferentially around a tire.

"Tread separation" means pulling away of the tread from the tire carcass.

S4. Requirements.

S4.1 Size and Construction. Each tire shall be designed to fit each rim specified for its size designation in each reference cited in the definition of "test rim" in S.3.

S4.2 Performance requirements.

S4.2.1 General. Each tire shall conform to each of the following:

(a) It shall meet the requirements specified in S4.2.2 for its tire size designation, type, and maximum permissible inflation pressure.

(b) Its maximum permissible inflation pressure shall be either 32, 36, 40, or 60 psi, or 240, 280, 300, [or 340 kPa].

(c) Its load rating shall be that specified in a submission made by an individual manufacturer, pursuant to S4.4.1(a), or in one of the publications described in S4.4.1(b) for its size designation, type and each appropriate inflation pressure. If the maximum load rating for a particular tire size is shown in more than one of the publications described in S4.4.1(b), each tire of that size designation shall have a maximum load rating that is not less than the published maximum load rating, or if there are differing maximum load ratings for the same tire size designation, not less than the lowest published maximum load rating.

(d) If manufactured on or after August 1, 1968, it shall incorporate a tread wear indicator that will provide a visual indication that the tire has worn to a tread depth of 1/16 inch.

(e) It shall, before being subjected to either the endurance test procedure specified in S5.4 or the high-speed performance test procedure specified in S5.5, exhibit no visual evidence of tread, sidewall, ply, cord, innerliner, or bead separation, chunking, broken cords, cracking or open splices.

(f) It shall meet the requirements of S4.2.2..5 and S4.2.2.6 when tested on a test wheel described in S5.4.2.1 either alone or simultaneously with up to 5 other tires.

S4.2.2 Test requirements.

S4.2.2.1 Test sample. For each test sample use—

(a) One tire for physical dimensions, resistance to bead unseating, and strength, in sequence;

(b) Another tire for tire endurance; and

(c) A third tire for high-speed performance.

S4.2.2.2 Physical Dimensions. The actual section width and overall width for each tire measured in accordance with S5.1, shall not exceed the section width specified in a submission made by an individual manufacturer, pursuant to S4.4.1(a) or in one of the publications described in S4.4.1(b) for its size designation and type by more than:

(1) (For tires with a maximum permissible inflation pressure of 32, 36, or 40 psi) 7 percent, or

(2) (For tires with a maximum permissible inflation pressure of 60 psi or 240, 280, or 300, [or 340 kPa]) 7 percent or 0.4 inches, whichever is larger.

Its size factor shall be at least as large as that specified in a submission made by an individual manufacturer, pursuant to S4.4.1(a), or in one of the publications described in S4.4.1(b) for its size designation and type.

S4.2.2.3 Tubeless tire resistance to bead unseating.

S4.2.2.3.1 When a tubeless tire that has a maximum inflation pressure other than 60 psi is tested in accordance with S5.2, the applied force required to unseat the tire bead at the point of contact shall be not less than:

(a) 1500 pounds for tires with a designated section width of less than six (6) inches;

(b) 2000 pounds for tires with a designated section width of six (6) inches or more, but less than eight (8) inches;

(c) 2,500 pounds for tires with a designated section width of eight (8) inches or more, using the section width specified in a submission made by an individual manufacturer, pursuant to S4.4.1(a), or in one of the publications described in S4.4.1(b) for the applicable tire size designation and type.

S4.2.2.3.2 When a tire that has a maximum inflation pressure of 60 psi is tested in accordance with S5.2, the applied force required to unseat the tire bead at the point of contact shall be not less than:

(a) 1500 pounds for tires with a maximum load rating of less than 880 pounds;

(b) 2000 pounds for tires with a maximum load rating of 880 pounds or more but less than 1400 pounds;

[(c) 2,500 pounds for tires with a maximum load rating of 1,400 pounds or more, using the maximum load rating marked on the sidewall of the tire. (47 F.R. 36180—August 19, 1982. Effective: August 19, 1982)]

S4.2.2.4 Tire strength. Each tire shall meet the requirements for minimum breaking energy specified in Table I when tested in accordance with S5.3.

S4.2.2.5 Tire endurance. When the tire has been subjected to the laboratory endurance test specified in S5.4, using a test rim that undergoes no permanent deformation and allows no loss of air through the portion that it comprises of the tire-rim pressure chamber:

(a) There shall be no visual evidence of tread, sidewall, ply, cord, innerliner, or bead separation, chunking, broken cords, cracking, or open splices.

(b) The tire pressure at the end of the test shall be not less than the initial pressure specified in S5.4.1.1.

S4.2.2.6 High-speed performance. When the tire has been subjected to the laboratory high-speed performance test specified in S5.5, using a test rim that undergoes no permanent deformation and allows no loss of air through the portion that it comprises of the tire-rim pressure chamber, the tire shall meet the requirements set forth in S4.2.2.5(a) and (b).

S4.3 Labeling requirements. Except as provided in S4.3.1 and S4.3.2 each tire shall have permanently molded into or onto both sidewalls, in letters and numerals not less than 0.078 inches high, the information shown below in (a) through (g). On at least one sidewall, the information shall be positioned in an area between the maximum section width and bead of the tire. However, in no case shall the information be positioned on the tire so that it is obstructed by the flange of any rim designated for use with that tire in Standard Nos. 109 and 110 (571.109 and 571.110 of this part).

(a) One size designation, except that equivalent inch and metric size designations may be used;

(b) Maximum permissible inflation pressure;

(c) Maximum load rating;

(d) The generic name of each cord material used in the plies (both sidewall and tread area) of the tire;

(e) Actual number of plies in the sidewall, and the actual number of plies in the tread area if different;

(f) The words "tubeless" or "tube type" as applicable; and

(g) The word "radial" if the tire is a radial ply tire.

S4.3.1 Each tire shall be labeled with the symbol DOT in the manner specified in Part 574 of this chapter, which shall constitute a certification that the tire conforms to applicable Federal motor vehicle safety standards.

S4.3.2 Each tire shall be labeled with the name of the manufacturer, or brand name and number assigned to the manufacturer in the manner specified in Part 574.

S4.3.3 Each tire manufactured between March 1, 1971, and May 22, 1971, shall either—

(a) Comply with S4.3(d) (2) and S4.3(i) (as effective until May 22, 1971); or

(b) Be labeled with the tire identification number required by Part 574.5 of this chapter and comply with S4.3.1 and S4.3.2 (as effective on and after May 22, 1971).

S4.3.4 If the maximum inflation pressure of a tire is 240, 280, or 300 kPa then:

(a) Each marking of that inflation pressure pursuant to S4.3(b) shall be followed in parenthesis by the equivalent inflation pressure in psi, rounded to the next higher whole number; and

(b) Each marking of the tire's maximum load rating pursuant to S4.3(c) in kilograms shall be followed in parentheses by the equivalent load

rating in pounds, rounded to the nearest whole number.

S4.3.5 If the maximum inflation pressure of a tire is 60 psi, the tire shall have permanently molded into or onto both sidewalls, in letters and numerals not less than ½ inch high, the words "Inflate to 60 psi." On both sidewalls, the words shall be positioned in an area between the tire shoulder and the bead of the tire. However, in no case shall the words be positioned on the tire so that they are obstructed by the flange of any rim designated for use with that tire in this standard or in Standard No. 110 (§ 571.110 of this part).

S4.4 Tire and rim matching information.

S4.4.1 Each manufacturer of tires shall ensure that a listing of the rims that may be used with each tire that he produces is provided to the public. A listing compiled in accordance with paragraph (a) of this section need not include dimensional specifications or diagram of a rim if the rim's dimensional specifications and diagram are contained in each listing published in accordance with paragraph (b). The listing shall be in one of the following forms:

(a) Listed by manufacturer name or brand name in a document furnished to dealers of the manufacturer's tires, to any person upon request, and in duplicate to: Office of Vehicle Safety Standards, Crash Avoidance Division, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590; or

(b) Contained in publications, current at the date of manufacture or any later date, of at least one of the following organizations:

[The Tire and Rim Association.
The European Tyre and Rim Technical Organisation.
Japan Automobile Tire Manufacturers' Association, Inc.
Deutsche Industrie Norm
British Standards Institution.
Scandinavian Tire and Rim Organization.
The Tyre and Rim Association of Australia
(54 F.R. 38385—September 18, 1989. Effective: September 18, 1989.)]

S4.4.2 Information contained in any publication specified in S4.4.1(b) which lists general categories of tires and rims by size designation, type of construction and/or intended use, shall be considered to be manufacturer's information pursuant to S4.4.1 for the listed tires and rims, unless the publication itself or specific information provided according to S4.4.1(a) indicates otherwise.

S5. Test procedures.

S5.1 Physical Dimensions. Determine tire physical dimensions under uniform ambient conditions as follows:

(a) Mount the tire on a test rim having the test rim width specified in a submission made by an individual manufacturer, pursuant to S4.4.1(a), or in one of the publications described in S4.4.1(b) for that tire size designation and inflate it to the applicable pressure specified in Table II.

(b) Condition it at ambient room temperature for at least 24 hours.

(c) Readjust pressure to that specified in (a).

(d) Caliper the section width and overall width at six points approximately equally spaced around the tire circumference.

(e) Record the average of these measurements as the section width and overall width, respectively.

(f) Determine tire outer diameter by measuring the maximum circumference of the tire and dividing this dimension by pi (3.14).

S5.2 Tubeless tire bead unseating resistance.

S5.2.1 Preparation of tire-wheel assembly.

S5.2.1.1 Wash the tire, dry it at the beads, and mount it without lubrication or adhesives on a clean, painted test rim.

S5.2.1.2 Inflate it to the applicable pressure specified in Table II at ambient room temperature.

S5.2.1.3 Mount the wheel and tire in the fixture shown in Figure 1, and force the bead unseating block shown in Figure 2 or Figure 2A against the tire sidewall as required by the geometry of the fixture. However, in testing a tire that has an inflation pressure of 60 psi, only use the bead unseating block described in Figure 2A.

S5.2.2 Test procedure.

S5.2.2.1 Apply a load through the block to the tire outer sidewall at the distance specified in Figure 1 for the applicable wheel size at a rate of 2 inches per minute, with the load arm substantially parallel to the tire and rim assembly at the time of engagement.

S5.2.2.2 Increase the load until the bead unseats or the applicable value specified in S4.2.2.3 is reached.

S5.2.2.3 Repeat the test at least four places equally spaced around the tire circumference.

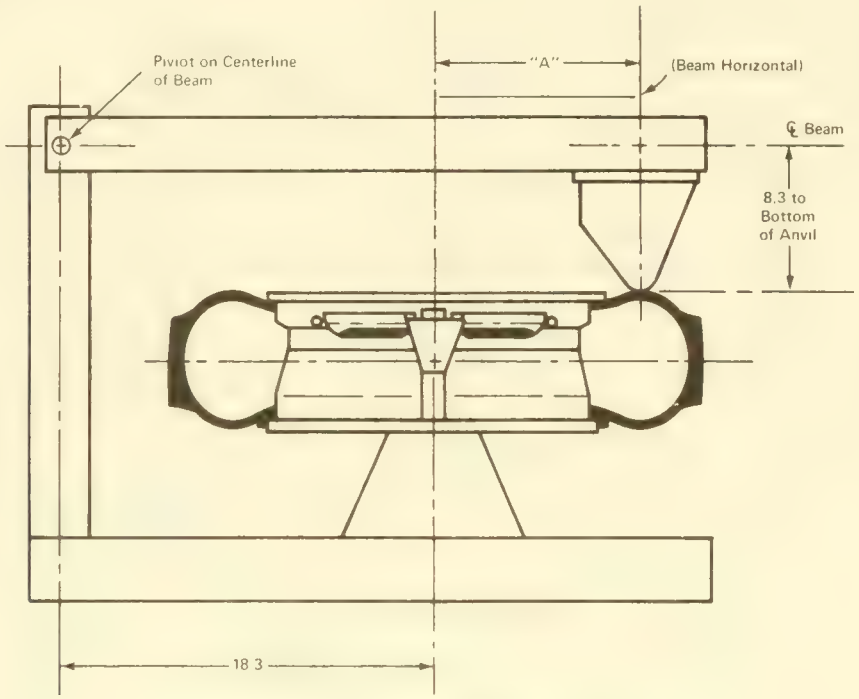
S5.3 Tire strength.

S5.3.1 Preparation of tire.

S5.3.1.1 Mount the tire on a test rim and inflate it to the applicable pressure specified in Table II;

S5.3.1.2 Condition it at room temperature for at least 3 hours; and

S5.3.1.3 Readjust its pressure to that specified in S5.3.1.1.



Wheel Size	*Dimension "A" for tires with maximum inflation pressure*	
	Other than 60 lb/in²	*60 lb/in²*
17″	12.0″	—
16″	11.5″	9.9″
15″	11.0″	9.4″
14″	10.5″	8.9″
13″	10.0″	8.4″
12″	9.5″	—
11″	9.0″	—
10″	8.5″	—
320 mm	8.50″	
340 mm	9.00″	
345 mm	9.25″	
365 mm	9.75″	
370 mm	10.00″	
390 mm	11.00″	
415 mm	11.50″	

Figure 1—Bead Unseating Fixture—Dimesions in Inches

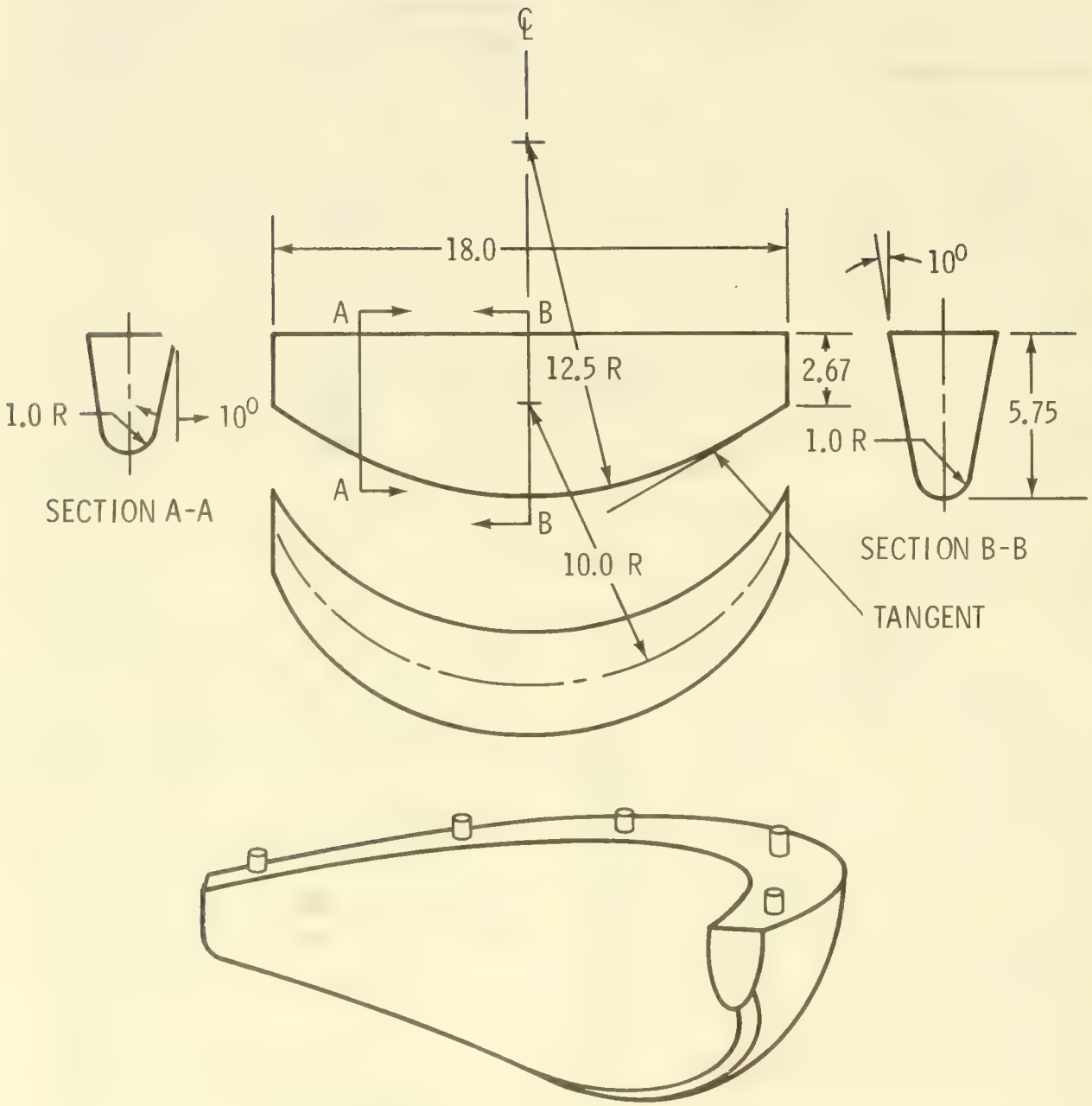


FIGURE 2—Diagram of Bead Unseating Block Dimensions in Inches

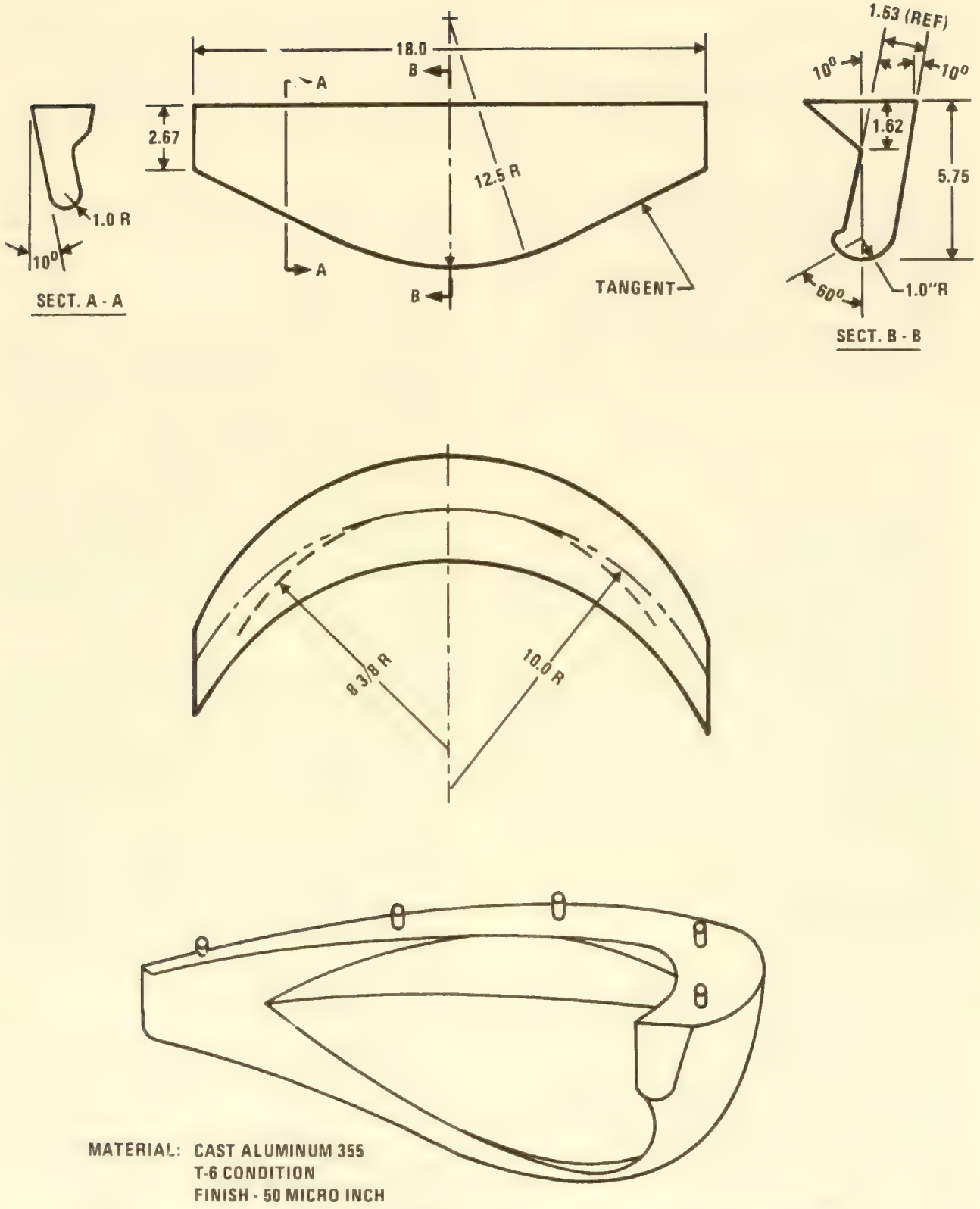


FIGURE 2A—Diagram of Bead Unseating Block Dimensions in Inches

S5.3.2 Test procedure.

S5.3.2.1 Force a ¾-inch-diameter cylindrical steel plunger with a hemispherical end perpendicularly into the tread rib as near to the centerline as possible, avoiding penetration into the tread groove, at the rate of 2 inches per minute.

S5.3.2.2 Record the force and penetration at five test points equally spaced around the circumference of the tire. If the tire fails to break before the plunger is stopped by reaching the rim, record the force and penetration as the rim is reached and use these values in S5.3.2.3.

S5.3.2.3 Compute the breaking energy for each test point by means of the following formula:

$$W = \frac{F \times P}{2}$$

where

W = Energy, inch-pounds;
F = Force, pounds; and
P = Penetration, inches.

S5.3.2.4 Determine the breaking energy value for the tire by computing the average of the five values obtained in accordance with S5.3.2.3.

S5.4 Tire endurance.

S5.4.1 Preparation of tire.

S5.4.1.1 Mount a new tire on a test rim and inflate it to the applicable pressure specified in Table II.

S5.4.1.2 Condition the tire assembly to 100 ± 5°F. for at least three hours.

S5.4.1.3 Readjust tire pressure to that specified in S5.4.1.1 immediately before testing.

S5.4.2 Test procedure.

S5.4.2.1 Mount the tire and wheel assembly on a test axle and press it against a flat-faced steel test wheel 67.23 inches in diameter and at least as wide as the section width of the tire to be tested or an approved equivalent test wheel, with the applicable test load specified in the table in S5.4.2.3 for the tire's size designation, type, and maximum permissible inflation pressure.

S5.4.2.2 During the test, the air surrounding the test area shall be 100 ± 5°F.

S5.4.2.3 Conduct the test at 50 miles per hour in accordance with the following schedule without pressure adjustment or other interruptions:

[The loads for the following periods are the specified percentage of the maximum load rating marked on the tire sidewall:

	Percent
4 hours	85
6 hours	90
24 hours	100

(46 F.R. 61473—December 17, 1981. Effective: 6/16/82)]

S5.4.2.4 Immediately after running the tire the required time, measure its inflation pressure. Allow the tire to cool for one hour. Then deflate the tire, remove it from the test rim, and inspect it for the conditions specified in S4.2.2.5(a).

S5.5 High-speed performance.

S5.5.1 [After preparing the tire in accordance with S5.4.1, mount the tire and wheel assembly in accordance with S5.4.2.1, and press it against the test wheel with a load of 88 percent of the tire's maximum load rating as marked on the tire sidewall. (46 F.R. 61473—December 17, 1981. Effective: 6/16/82)]

S5.5.2 Break in the tire by running it for 2 hours at 50 mph.

S5.5.3 Allow it to cool to 100 ± 5°F and readjust the inflation pressure to the applicable pressure specified in Table II.

S5.5.4 Without readjusting inflation pressure, test at 75 mph for 30 minutes, 80 mph for 30 minutes, and 85 mph for 30 minutes.

S5.5.5 Immediately after running the tire the required time, measure its inflation pressure. Allow the tire to cool for one hour. Then deflate the tire, remove it from the test rim, and inspect it for the conditions specified in S4.2.2.5(a).

S6. Nonconforming tires. [No tire that is designed for use on passenger cars and manufactured on or after October 1, 1972, but does not conform to all the requirements of this standard, shall be sold, offered for sale, introduced or delivered for introduction into interstate commerce, or imported into the United States, for any purpose. (46 F.R.61473—December 17, 1981. Effective: 6/16/82)]

APPENDIX A

GUIDELINES FOR ABBREVIATED RULEMAKING PROCEDURE FOR ADDING TIRE SIZES TO STANDARD NO. 109

Tables I–A through I–J of Standard No. 109, as amended (33 F.R. 5946-5949) are deleted and in their places the following is inserted:

The following tables list tire sizes and tire constructions with proper load and inflation values. The tables group tires of related contruction and load/inflation values. Persons requesting the addition of new tire sizes to the tables or the addition of tables for new tire construction may, when the additions requested are compatible with existent groupings, or when adequate justification for new tables exists, submit five (5) copies of information and data supporting the request to the Secretary of Transportation, Attention: Motor Vehicle Programs, National Highway Traffic Safety Administration, U.S. Depart of Transportation, Washington, D.C. 20590.

The information should contain but not be limited to the following:

(1) The tire size designation and whether the tire is an addition to a category of tires listed in the tables, or a new category for which a table has not been developed.

(2) The tire dimensions, including aspect ratio, size factor, section width, overall width and test rim size.

(3) The load-inflation schedule of the tire.

(4) [A statement as to whether the tire size designation and load inflation schedule has been coordinated with the Tire and Rim Association, the European Tyre and Rim Technical Organisation, the Japan Automobile Tire Manufacturers' Association, Inc., the Deutsche Industrie Norm, the British Standards Institution, the Scandinavian Tire and Rim Organization, and the Tyre and Rim Association of Australia. **(54 F.R. 38385—September 18, 1989. Effective: September 18, 1989)]**

(5) Copies of test data sheets showing test conditions, results and conclusions obtained for individual tests specified in FMVSS No. 109.

(6) Justification for the additional tire sizes.

The addition of new size tires to the tables, or the addition of tables for new tire construction, is accomplished through an abbreviated procedure consisting of the publication in the *Federal Register* of the petitioned tire sizes or tables. If no comments are received, the amendment becomes effective after 30 days from the date of publication. If comments objecting to amendment are received, additinal rule making pursuant to Part 353 of the Procedural Rules for Motor Vehicle Safety Standards will be considered.

Amendments to Appendix A of Standard No. 109 may be issued by the Director of Motor Vehicle Programs, National Highway Traffic Safety Administration.

33 F.R. 14964
October 5, 1968

PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE SAFETY STANDARD NO. 109

(Docket No. 69–30; Notice No. 1)

On October 5, 1968, the Federal Highway Administration published guidelines in the *Federal Register* (33 F.R. 14964) by which routine additions could be added to Appendix A of Standard No. 109 and the Appendix A of Standard No. 110. These guidelines provided an abbreviated rule-making procedure for adding tire sizes to Standard No. 109 and alternative rim sizes to Standard No. 110, whereby the addition becomes effective 30 days from date of publication in the *Federal Register* if no objections to the proposed additions are received. If comments objecting to the amendment warrant, rule making pursuant to the rule making procedures for motor vehicle safety standards (49 CFR 353) will be followed.

The European Tyre and Rim Technical Organisation has petitioned for the addition of the new "Millimeter 70 Series" radial ply tires and the new "Low Section" radial ply tires to Table I of Appendix A of Standard No. 109 and the appropriate test and alternative rims to Table I of Appendix A of Standard No. 110. Also, the Toyota Motor Company, Ltd. has petitioned for the addition of the 5–K alternative rim size for the 165R15 tire size designation to Table 1 of Appendix A of Standard No. 110.

On the basis of the data submitted by the European Tyre and Rim Technical Organisation and the Toyota Motor Company, Ltd., indicating compliance with the requirements of Federal Motor Vehicle Safety Standard No. 109 and No. 110 and other information submitted in accordance with the procedural guidelines set forth, Appendix A of Federal Motor Vehicle Safety Standard No. 109 is being amended and Table I of Appendix A of Standard No. 110 is being amended.

In consideration of the foregoing, Section 371.21 of Part 371 Federal Motor Vehicle Safety Standards, Appendix A of Standards No. 109 (33 F.R. 14964) and Appendix A of Standard No. 110 (34 F.R. 16102) are being amended as set forth below effective 30 days from date of publication in the *Federal Register.*

These amendments are issued under authority of Sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 USC 1392, 1407), and delegation from the Secretary of Transportation contained in § 1.4(c) of Part 1 of the Regulations of the Office of the Secretary (49 CFR 1.4(c)), and the delegation from the Federal Highway Administrator of October 5, 1968 (33 F.R. 14964).

H. M. Jacklin, Jr.
Acting Director

Motor Vehicle Safety Performance Service

34 F.R. 14376
September 13, 1969

APPENDIX A—FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 109

The following tables list tire sizes and tire constructions with proper load and inflation values. The tables group tires of related constructions and load/inflation values. Persons requesting the addition of new tire sizes to the tables or the addition of tables for new tire constructions may, when the additions requested are compatible with existent groupings, or when adequate justification for new tables exists, submit five (5) copies of information and data supporting the request to the Secretary of Transportation, Attention: Motor Vehicle Programs, National Highway Traffic Safety Administration, U.S. Department of Transportation, Washington, D.C. 20590.

The information should contain the following:

1. The tire size designation, and a statement that the tire is an addition to a category for which a table has not been developed.

2. The tire dimensions, including aspect ratio, size factor, section width, overall width, and test rim size.

3. The load-inflation schedule of the tire.

4. A statement that the tire size designation and load inflation schedule has been coordinated with the Tire and Rim Association, the European Tyre and Rim Technical Organisation, the Society of Manufacturers and Traders Limited, the Japan Automobile Tire Manufacturers Association, the Deutsche Industrie Norm and the Scandinavian Tire and Rim Organization.

5. Copies of test data sheets showing test conditions, results and conclusions obtained for individual tests specified in Federal Motor Vehicle Safety Standard No. 109.

6. Justification for the additional tire sizes.

The addition of new size tires to the tables, or the addition of tables for new tire construction, is accomplished through an abbreviated procedure consisting of publication in the *Federal Register* of the petitioned tire sizes or tables. If no comments are received, the amendment becomes effective 30 days from the date of publication. If objections to the amendment are received, additional rulemaking pursuant to Part 553 of the procedural rules for Motor Vehicle Safety Standards will be initiated.

36 F.R. 8298
May 4, 1971

PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 71–9; Notice No. 1)

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14969) by which routine additions of tire and rim sizes could be added to Appendix A of Standard No. 109 and to Appendix A of Standard No. 110. Under these guidelines, the addition becomes effective 30 days from the date of its publication in the *Federal Register*, if no objections to the proposed additions are received. If objections to the amendment are received, rulemaking pursuant to the procedures for motor vehicle safety standards (49 CFR Part 553) are followed. Numerous additions to Appendix A of Standard 109 and Appendix A of Standard 110 have been made under these procedures, and Appendix A of Standard No. 109 and Appendix A of Standard No. 110 are being reissued at this time to incorporate all the changes that have been made to these appendices since October 5, 1968.

At the top of each table in the appendices there is an amendment number that indicates the number of times the table has been amended since its original issue. Where feasible, a brief note below the table indicates the substance of the change being made. This procedure will be followed in future amendments to the tables.

In addition to republishing all previous additions to the tables, new tire size designations and alternative rims are hereby added to various tables. The European Tyre and Rim Technical Organisation has petitioned for the addition of 140 R 12 and 6.5–13 as tire size designations in Appendix A of Standard No. 109, and has requested that test and alternate rim(s) for these tires be added to Appendix A of Standard No. 110.

The European Tyre and Rim Technical Organisation has also petitioned for the addition of the following alternative rims to Table I—Appendix A of Standard No. 110.

Tire size designation:	*Alternative rim*
175–13/6.95–13	5½–J.
6.2–13	4½–J.
205 R 14	7½–K.
205 R 15	6½–L.

In addition to the above, the following errors in the tables have been brought to the National Highway Traffic Safety Administration's attention and are hereby corrected:

(a) Standard No. 109—Appendix A—Table I–B. The 26-pound inflation pressure maximum load for the A70–13 tire size designation is changed to read "940".

(b) Standard No. 110—Appendix A—Table I. The alternate rim "5½–J" of the 6.40–15 tire size in section Table I–C is corrected to read "5½–JJ".

In consideration of the foregoing, § 571.21 of Part 571, Federal Motor Vehicle Safety Standards, Appendix A of Standard No. 109 and Appendix A of Standard No. 110 are amended . . . effective 30 days from date of publication in the *Federal Register*.

Issued on April 16, 1971.

Rodolfo A. Diaz,
Acting Associate Administrator,
Motor Vehicle Programs

36 F.R. 8298
May 4, 1971

PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 71–12; Notice No. 1)

This amendment adds certain tire sizes and alternative rim sizes to the passenger car tire standard and the tire selection and rim standard.

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions could be added to Appendix A, Standard No. 109 and to Appendix A, Standard No. 110. Under these guidelines, the addition becomes effective 30 days from date of publication in the *Federal Register*, if no objections to the proposed additions are received. If objections to the amendment are received, rulemaking pursuant to the procedures for motor vehicle safety standards (49 CFR 553) are followed. All changes made to the appendices as of April 16, 1971 were reissued and incorporated into the tables and republished in the *Federal Register* of May 4, 1971 (36 F.R. 8298).

The Rubber Manufacturers Association has petitioned for the addition of the new AR78–13, CR78–13, D78–13, DR70–13, BR78–14, CR70–14, E60–14, H60–14, A78–15, AR78–15, and HR60–15 tire size designations to Table I, Appendix A of Standard No. 109 and the appropriate test and alternative rims to Table I, Appendix A of Standard No. 110.

The Rubber Manufacturers Association has also petitioned for the addition of the 6–JJ alternative rim size for the JR70–15 and LR70–15 tire size designations; the 8–JJ alternative rim size for the FR60–15 and GR60–15 tire size designations and the 4–JJ alternative rim size for the 175R13 tire size designation to Table I, Appendix A of Standard No. 110.

The European Tyre and Rim Technical Organisation has petitioned for the addition of the 8½–L and 8–K alternative rims for the GP70–15 tire size designation to Table I, Appendix A of Standard No. 110.

The Ford Motor Company has petitioned for the addition of the 5½–JJ alternative rim size for the 175R13 tire size designation to Table I, Appendix A of Standard No. 110.

On the basis of the data submitted by the Rubber Manufacturers Association, the European Tyre and Rim Technical Organisation, and the Ford Motor Company indicating compliance with the requirements of Federal Motor Vehicle Safety Standards No. 109 and No. 110 and other information submitted in accordance with the procedural guidelines set forth, Table I, Appendix A of Standard No. 109 is being amended and Table I, Appendix A of Standard No. 110 is being amended.

In consideration of the foregoing, § 571.21 of Part 571 Federal Motor Vehicle Safety Standards, Appendix A of Standard No. 109 and Appendix A of Standard No. 110 are amended to read as set forth below, effective 30 days from date of publication in the *Federal Register*.

Issued on May 24, 1971.

Robert L. Carter
Acting Associate Administrator
Motor Vehicle Programs

---

36 F.R. 10733
June 2, 1971

PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 71–16; Notice No. 1)

This amendment adds certain tire sizes and alternative rim size to the passenger car tire standard and the tire selection and rim standard.

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions could be added to Appendix A, Standard No. 109 and to Appendix A, Standard No. 110. Under these guidelines, the addition becomes effective 30 days from date of publication in the *Federal Register*, if no objections to the proposed additions are received. If objections to the amendment are received, rulemaking pursuant to the procedures for motor vehicle safety standards (49 CFR 553) are followed. All changes made to the appendices as of April 16, 1971 were reissued and incorporated into the tables and republished in the *Federal Register* of May 4, 1971 (36 F.R. 8298).

The European Tyre and Rim Technical Organisation has petitioned for the following:

(1) The addition of the new 205/70 R14, 215/70 R14, 225/70 R14, 195/70 R15, 205/70 R15, 215/70 R15, 225/70 R15, 150 R12, 150 R14 and 180 R15 tire size designations to Table I, Appendix A of Standard No. 109 and the appropriate test and alternative rims to Table I, Appendix A of Standard No. 110.

(2) The addition of the 5.50 B altenative rim for the 165 R13 tire size designation to Table I, Appendix A of Standard No. 110.

(3) The addition of the 16 psi and 18 psi loads to Table I-H, Appendix A of Standard No. 109.

The Rubber Manufacturers Association has petitioned for the addition of the 6–JJ alternative rim size for the DR 78–14 tire size designation to Table I, Appendix A of Standard No. 110.

On the basis of the data submitted by the European Tyre aand Rim Technical Organisation and the Rubber Manufacturers Association indicating compliance with the requirements of Federal Motor Vehicle Safety Standards No. 109 and 110 and other information submitted in accordance witn the procedural guidelines, § 571.21 of Part 571 Federal Motor Vehicle Safety Standards, Appendix A of Standard No. 109 and Appendix A of Standard No. 110 are amended to read as set forth below, effective 30 days from date of publication in the *Federal Register*.

In addition, Appendix A of Standard No. 109 is amended in order to make it clear that requests for additional tire sizes should specify whether the tire is an addition to a category of tires listed in the tables, or a new category for which a table has not been developed.

Issued on July 13, 1971.

Robert L. Carter
Acting Associate Administrator
Motor Vehicle Programs

36 F.R. 13601
July 22, 1971

PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 71–17; Notice No. 1)

This amendment adds certain tire sizes and alternative rim size to the passenger car tire standard and the tire selection and rim standard.

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions could be added to Appendix A, Standard No. 109 and to Appendix A, Standard No. 110. Under these guidelines, the addition becomes effective 30 days from date of publication in the *Federal Register*, if no objections to the proposed additions are received. If objections to the amendment are received, rulemaking pursuant to the procedures for motor vehicle safety standards (49 CFR 553) are followed. All changes made to the appendices as of April 16, 1971 were reissued and incorporated into the tables and republished in the *Federal Register* on May 4, 1971 (36 F.R. 8298).

The European Tyre and Rim Technical Organisation has petitioned for the addition of the 7–K alternative rim size for the 185/70 R15 tire size designation and the 6–JJ alternative rim size for the 205/70 R14 tire size designation to Table I, Appendix A of Standard No. 110.

The Rubber Manufacturers Association has petitioned for the addition of the 6½–JJ alternative rim size for the G78–15 tire size designation to Table I, Appendix A of Standard No. 110.

The Rubber Manufacturers Association has petitioned to change the test rim from 7½–inch to 7–inch for the J60–14, J60–15 and L60–15 tire size designations currently listed within the Table I-K, Appendix A of Standard No. 109.

Also, the Rubber Manufacturers Association has petitioned to correct the section width and minimum size factor measurements for the GR60–15 tire size designation listed within Table I-R, Appendix A of Standard No. 109.

On the basis of the data submitted by the European Tyre and Rim Technical Organisation and the Rubber Manufacturers Association indicating compliance with the requirements of Federal Motor Vehicle Safety Standards No. 109 and 110 and other information submitted in accordance with the procedural guidelines, § 571.21 of Part 571 Federal Motor Vehicle Safety Standards, Appendix A of Standard No. 109 and Appendix A of Standard No. 110 are amended as set forth below, effective 30 days from date of publication in the *Federal Register*.

Issued on July 22, 1971.

Robert L. Carter
Acting Associate Administrator
Motor Vehicle Programs

36 F.R. 14134
July 30, 1971

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109

Pneumatic Tires—Passenger Cars

(Docket No. 71–20, Notice 1)

This amendment adds certain tire sizes and alternative rim sizes to the passenger car tire standard and tire selection rim standard.

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions could be added to Appendix A, Standard No. 109 and to Appendix A, Standard No. 110. Under these guidelines, the addition becomes effective 30 days from date of publication in the *Federal Register*, if no objections to the proposed additions are received. If objections to the amendment are received, rulemaking pursuant to the procedures for motor vehicle safety standards (49 CFR Part 553) are followed.

The Rubber Manufacturers Association has petitioned for the following:

(1) The addition of the new GR60–14 tire size designation to Table I, Appendix A of Standard No. 109 and the appropriate test and alternative rims to Table I, Appendix A of Standard No. 110.

(2) The addition of the following alternative rims to Table I, Appendix A of Standard No. 110:

(a) The 9–JJ alternative rim size for the G60–15 tire size designations.

(b) The 5–JJ and 6–JJ alternative rim sizes for the FR78–14 tire size designation.

(c) The 8–JJ alternative rim size for the F70–14 tire size designation.

(d) The 5–JJ alternative rim size for the D70–14 tire size designation.

(e) The 7–JJ alternative rim size for the GR70–15 tire size designation.

(f) The 6½–JJ alternative rim size for the 8.25–15 tire size designation.

The European Tyre and Rim Technical Organisation has petitioned for the following:

(1) The addition of the new 230–15, 245/60 R14 and 255/60 R15 tire size designations to Table I, Appendix A of Standard No. 109 and the appropriate test and alternative rims to Table I, Appendix A of Standard No. 110.

(2) The addition of the following alternative rims to Table I, Appendix A of Standard No. 110:

(a) The 9–L alternative rim size for the HR60–15 tire size designation.

(b) The 8K and 8½–L alternative rim sizes for the 225/70 R15 tire size designation.

(c) The 5½–JJ alternative rim size for the 155 R13 tire size designation.

On the basis of the data submitted by the European Tyre and Rim Technical Organisation and the Rubber Manufacturers Association indicating compliance with the requirements of Federal Motor Vehicle Safety Standards No. 109 and No. 110 and other information submitted in accordance with the procedural guidelines, § 571.-21 of Part 571 Federal Motor Vehicle Safety Standards, Appendix A of Standard No. 109 and Appendix A of Standard 110 are amended to read as set forth below, effective 30 days from date of publication in the *Federal Register*.

Issued on October 21, 1971.

Robert L. Carter
Acting Associate Administrator
Motor Vehicle Programs

36 F.R. 21355
November 6, 1971

PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 71–22; Notice No. 1)

This amendment adds certain tire sizes and alternative rim sizes to the passenger car tire standard and tire selection and rim standard.

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions could be added to Appendix A, Standard No. 109 (§ 571.109) and to Appendix A, Standard No. 110 (§ 571.110). Under these guidelines, the addition becomes effective 30 days from date of publication in the *Federal Register*, if no objections to the proposed additions are received. If objections to the amendment are received, rulemaking pursuant to the procedures for motor vehicle safety standards (49 CFR Part 553) is followed.

The Rubber Manufacturers Association has petitioned for the following:

(1) The addition of the new AR70–13. B60–13 and BR60–13 tire size designations to Table I, Appendix A of Standard No. 109 and the appropriate test and alternative rims to Table I, Appendix A of Standard No. 110.

(2) The addition of the following alternative rim sizes to Table I, Appendix A of Standard No. 110:

(a) The 6½–JJ alternative rim size for the F78–15 tire size designation.

(b) The 6½–JJ alternative rim size for the 7.75–15 tire size designation.

The European Tyre and Rim Technical Organisation has petitioned for the addition of the following alternative rim sizes to Table I, Appendix A of Standard No. 110:

(1) The 5–JJ alternative rim size for the 145R13 tire size designation.

(2) The 4–JJ alternative rim size for the 150R13 tire size designation.

(3) The 6½–JJ alternative rim size for the 185R14 tire size designation.

(4) The 6½–JJ alternative rim size for the 9.00–15 tire size designation.

The Ford Motor Company has petitioned for the addition of the 5½–JJ alternative rim size for the 6.45–13/165–13 tire size designation to Table I, Appendix A of Standard No. 110.

The Toyota Motor Company, Ltd., has petitioned for the addition of the 4–JJ alternative rim for the 155R13 tire size designation to Table 1, Appendix A of Standard No. 110.

On the basis of the data submitted by the European Tyre and Rim Technical Organisation, the Rubber Manufacturers Association, the Ford Motor Company and Toyota Motor Company, Ltd. indicating compliance with the requirements of Federal Motor Vehicle Safety Standards No. 109 and No. 110 and other information submitted in accordance with the procedural guidelines, § 571.109 and § 571.110 of Title 49, Code of Federal Regulations are amended, effective 30 days from date of publication in the *Federal Register*.

(Secs. 103 and 119, National Traffic and Motor Vehicle Safety Act of 1966, 15 U.S.C. 1392, 1407; delegations of authority at 49 CFR 1.51 and 501.8)

Issued on December 15, 1971.

Robert L. Carter
Acting Associate Administrator
Motor Vehicle Programs

36 F.R. 24940
December 24, 1971

PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 72-18; Notice 1)

This amendment adds certain tire sizes and accompanying values, and amends values for existing tire size designations in Motor Vehicle Safety Standard No. 109 (49 CFR § 571.109), and adds alternative rim sizes and test rims to Motor Vehicle Safety Standard No. 110 (49 CFR § 571.110).

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions could be added to Appendix A, Standard No. 109, and to Appendix A, Standard No. 110. Under these guidelines the additions become effective 30 days from the date of publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking pursuant to the procedures for motor vehicle safety standards (49 CFR 553) is followed.

Beginning in January 1972, the NHTSA inaugurated a procedure whereby amendments to the tables of Appendix A of Standard No. 109 and Appendix A of Standard No. 110 would be published approximately 4 times per year: on or about January 1, April 1, July 1, and October 1. Amendments to the tables were not published April 1 or July 1, 1972, and this notice publishes the amendments that would normally have been published on those dates.

Accordingly, Appendix A of Motor Vehicle Safety Standard No. 109 (49 CFR § 571.109), and Appendix A of Motor Vehicle Safety Standard No. 110 (49 CFR § 571.110), are amended, subject to the thirty-day provision indicated above, as specified below.

This notice is issued under the authority of sections 103, 119, 201, and 202 of the National Traffic and Motor Vehicle Safety Act (15 USC 1392, 1407, 1421, 1422) and the delegations of authority at 49 CFR 1.51 and 49 CFR 501.8.

Issued on July 27, 1972.

Robert L. Carter
Associate Administrator for
Motor Vehicle Programs

37 F.R. 15430
August 2, 1972

PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires, Tire Selection and Rims for Passenger Cars

(Docket No. 72–18; Notice 2)

The NHTSA published on August 2, 1972 (37 F.R. 15430), additions and amendments to the tables in the Appendices of Motor Vehicle Safety Standard No. 109 (49 CFR 571.109) and Motor Vehicle Safety Standard No. 110 (49 CFR 571.110). Guidelines published in the *Federal Register* on October 5, 1968 (33 F.R. 14964), provide that routine additions to the Tables become effective 30 days from the publication date if no objections are received. If objections are received, rulemaking pursuant to 49 CFR Part 553 is initiated.

The European Tyre and Rim Technical Association (E.T.A.T.O.) has raised an objection to changes made by the August 2 publication to load values in Table I–H of Standard No. 109. Accordingly, the amendment to Table I–H, Appendix A, Motor Vehicle Safety Standard No. 109 (571.109), published August 2, 1972 (item 3, page 15430), is hereby revoked. Notice of proposed rulemaking regarding these load values will be issued. The other amendments issued in the publication of August 2, 1972, will become effective if no further objections are received by September 1, 1972.

This notice is issued pursuant to sections 103, 119, 201, and 202 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1392, 1407, 1421, and 1422) and the delegations of authority at 49 CFR 1.51, 49 CFR 501.8.

Issued on August 29, 1972.

Robert L. Carter
Associate Administrator
Motor Vehicle Programs

37 F.R. 17837
September 1, 1972

PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires, Tire Selection and Rims for Passenger Cars

(Docket No. 72–21; Notice 1)

This amendment adds certain new tire size designations and accompanying values and amends values for existing tire size designations in Motor Vehicle Safety Standard No. 109 (49 CFR § 571.109), and adds alternative rim sizes and test rims to Motor Vehicle Safety Standard No. 110 (49 CFR § 571.110).

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions could be added to Appendix A, Standard No. 109, and to Appendix A, Standard No. 110. Under these guidelines the additions become effective 30 days from the date of publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking pursuant to the procedures for motor vehicle safety standards (49 CFR Part 533) is followed. An amendment to the tables was published on August 2, 1972 (37 F.R. 15430). This notice adds tire size designations inadvertently omitted and corrects certain errors made in that publication. It also adds a new tire size designation on which a petition was received after August 2, 1972.

Accordingly, Appendix A of Motor Vehicle Safety Standard No. 109 (49 CFR § 571.109), and Appendix A of Motor Vehicle Safety Standard No. 110 (49 CFR § 571.110), are amended . . .

Effective: October 15, 1972

(Sec. 103, 119, 201, 202, National Traffic and Motor Vehicle Safety Act. 15 U.S.C. 1392, 1407, 1421, 1422 delegations of authority at 49 CFR 1.51, 49 CFR 501.8)

Issued on September 8, 1972.

Robert L. Carter
Associate Administrator
Motor Vehicle Programs

37 F.R. 18733
September 15, 1972

PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires, Tire Selection and Rims for Passenger Cars

(Docket No. 72–18; Notice 3)

The NHTSA published on August 2, 1972 (37 F.R. 15430), additions and amendments to the Tables in the Appendices of Motor Vehicle Safety Standard No. 109 (49 CFR § 571.109) and Motor Vehicle Safety Standard No. 110 (49 CFR § 571.110). Guidelines published in the *Federal Register* on October 5, 1968 (33 F.R. 14964), provide that routine additions to the Tables become effective 30 days from the publication date if no objections are received. If objections are received, rulemaking pursuant to 49 CFR Part 553 is initiated.

The Rubber Manufacturers' Association (R.M.A.) and the B.F. Goodrich Tire Company have raised an objection to the change made by the August 2 publication to Footnote 1, Table I–R of Standard No. 109, which would have allowed the letters "HR", "SR", or "VR" to be included in any tire size designation adjacent to or in place of the dash. Accordingly, the amendment to Footnote 1, Table I–R of Appendix A, Motor Vehicle Safety Standard No. 109 (571.109), published August 2, 1972 (Item 17, page 15432), is hereby revoked. Notice of proposed rulemaking regarding this change will be issued before the rule is amended.

This notice is issued pursuant to sections 103, 119, 201, and 202 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1392, 1407, 1421, and 1422) and the delegations of authority at 49 CFR 1.51, 49 CFR 501.8.

Issued on September 14, 1972.

Elwood T. Driver
Acting Associate Administrator
Motor Vehicle Programs

37 F.R. 19138
September 19, 1972

PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 72–25; Notice1)

This amendment adds certain tire size designations to Motor Vehicle Safety Standard No. 109 (49 CFR 571.109) and adds alternative rim sizes and test rims to Motor Vehicle Safety Standard No. 110 (49 CFR 571.110).

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions could be made to Appendix A, Standard No. 109, and to Appendix A, Standard No. 110. Under these guidelines the additions become effective 30 days from the date of publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking pursuant to the procedures for motor vehicle safety standards (49 CFR Part 553) is followed.

Accordingly, Appendix A of Motor Vehicle Safety Standard No. 109 (49 CFR 571.109), and Appendix A of Motor Vehicle Safety Standard No. 110 (49 CFR 571.110), are amended, subject to the 30-day provision indicated above . . . .

This notice is issued pursuant to sections 103, 119, 201 and 202 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 USC 1392, 1407, 1421, 1422) and the delegation of authority of 49 CFR 1.51 and 40 CFR 501.8.

Issued on October 16, 1972.

Robert L. Carter
Associate Administrator

37 F.R. 22620
October 20, 1972

PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 73–7; Notice 1)

This amendment adds certain tire size designations to Federal Motor Vehicle Safety Standard No. 109 (49 CFR 571.109) and adds alternative rim sizes and test rims to Federal Motor Vehicle Safety Standard No. 110 (49 CFR 571.110).

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions could be made to Appendix A, Standard No. 109, and to Appendix A, Standard No. 110. Under these guidelines the additions become effective 30 days from publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking procedures for the issuance of motor vehicle safety standards (49 CFR Part 553) are followed.

Accordingly, Appendix A of Federal Motor Vehicle Safety Standard No. 109 (49 CFR 571.109), and Appendix A of Federal Motor Vehicle Safety Standard No. 110 (49 CFR 571.110), are amended, subject to the 30 day provision indicated above, as specified below.

Effective date: April 30, 1973, if objections are not received.

(Sec. 103, 119, 201, and 202, Pub. L. 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1407, 1421, and 1422; delegations of authority 49 CFR 1.51, 49 CFR 501.8)

Issued on March 26, 1973.

Robert L. Carter
Associate Administrator
Motor Vehicle Programs

38 F.R. 8514
April 3, 1973

PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 73–18; Notice 1)

This amendment adds certain tire size designations to Federal Motor Vehicle Safety Standard No. 109 (49 CFR 571.109) and adds alternative rim sizes and test rims to Federal Motor Vehicle Safety Standard No. 110 (49 CFR 571.110).

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions could be made to Appendix A, Standard No. 109, and to Appendix A, Standard No. 110. Under these guidelines the additions become effective 30 days from publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking procedures for the issuance of motor vehicle safety standards (49 CFR Part 553) are followed.

Accordingly, Appendix A of Federal Motor Vehicle Safety Standard No. 109 (49 CFR 571.109), and Appendix A, of Federal Motor Vehicle Safety Standard No. 110 (49 CFR 571.110), are amended, subject to the 30 day provision indicated above. . . .

Effective date: August 2, 1973, if objections are not received.

(Secs. 103, 119, 201, and 202, Public Law 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1407, 1421, and 1422; delegation of authority at 38 F.R. 12147)

Issued on June 26, 1973.

James E. Wilson
Associate Administrator
Traffic Safety Programs

38 F.R. 17842
July 5, 1973

PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 73–23; Notice 1)

This amendment adds certain tire size designations to 49 CFR § 571.109 (Federal Motor Vehicle Safety Standard No. 109) and adds alternative and test rim sizes to 49 CFR § 571.110 (Federal Motor Vehicle Safety Standard No. 110).

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions could be made to Appendix A, § 571.109, and to Appendix A, § 571.110. Under these guidelines the additions become effective 30 days from publication in the *Federal Register*, if no objections are received. If objections are received, rule making procedures for the issuance of motor vehicle safety standards (49 CFR Part 553) are followed.

Accordingly, Appendix A of 49 CFR § 571.109 and Appendix A of 49 CFR § 571.110 are amended, subject to the 30-day provision indicated above.

Effective date: November 9, 1973, if objections are not received.

(Sections 103, 119, 201, and 202, Pub. L. 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1407, 1421, and 1422; delegations of authority at 49 CFR § 1.51 and 49 CFR § 501.8.)

Issued on October 3, 1973.

Robert L. Carter
Associate Administrator
Motor Vehicle Programs

38 F.R. 28569
October 15, 1973

PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE SAFETY STANDARD NO. 109

(Docket No. 74–6; Notice 1)

This amendment adds certain tire size designations and corrects certain tire size criteria in 49 CFR 571.109 (Federal Motor Vehicle Safety Standard No. 109). It also adds alternative and test rim sizes to 49 CFR 571.110 (Federal Motor Vehicle Safety Standard No. 110).

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions could be made to Appendix A, § 571.109 and to Appendix A, § 571.110. Under these guidelines the additions become effective 30 days from publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking procedures for the issuance of motor vehicle safety standards (49 CFR Part 553) are followed.

Accordingly, Appendix A of 49 CFR § 571.109 and Appendix A of 49 CFR § 571.110 are amended, subject to the 30-day provision indicated above . . . .

Effective date: March 7, 1974, if objections are not received.

(Secs. 103, 119, 201 and 202, Pub. L. 89–563; 80 Stat. 718; 15 U.S.C. 1392, 1407, 1421, and 1422; delegations of authority at 49 CFR § 1.51 and 49 CFR § 501.8.)

Issued on January 30, 1974.

Robert L. Carter
Associate Administrator
Motor Vehicle Programs

39 F.R. 4664
February 6, 1974

PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE SAFETY STANDARD NO. 109

(Docket No. 74–17; Notice 1)

This amendment adds certain tire size designations to 49 CFR 571.109 (Federal Motor Vehicle Safety Standard No. 109) and adds alternative and test rim sizes to 49 CFR 571.110 (Federal Motor Vehicle Safety Standard No. 110).

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions could be made to Appendix A, § 571.109 and to Appendix A, § 571.110. Under these guidelines the additions become effective 30 days from publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking procedures for the issuance of motor vehicle safety standards (49 CFR Part 553) are followed.

Accordingly, Appendix A of 49 CFR § 571.109 and Appendix A of 49 CFR § 571.110 are amended, subject to the 30-day provision indicated above . . . .

Effective date: May 22, 1974, if objections are not received.

(Secs. 103, 119, 201 and 202, Pub. L. 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1407, 1421 and 1422; delegations of authority at 49 CFR § 1.51 and 49 CFR § 501.8.)

Issued on April 16, 1974.

Robert L. Carter
Associate Administrator
Motor Vehicle Programs

39 F.R. 14595
April 25, 1974

PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE SAFETY STANDARD NO. 109

(Docket No. 74–26; Notice 1)

This amendment adds certain tire size designations to 49 CFR 571.109 (Federal Motor Vehicle Safety Standard No. 109) and adds alternative and test rim sizes to 49 CFR 571.110 (Federal Motor Vehicle Safety Standard No. 110).

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions could be made to Appendix A, § 571.109 and to Appendix A, § 571.110. Under these guidelines the additions become effective 30 days from publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking procedures for the issuance of motor vehicle safety standards (49 CFR Part 553) are followed.

Accordingly, Appendix A of 49 CFR § 571.109 and Appendix A of 49 CFR § 571.110 are amended, subject to the 30-day provision indicated above . . . .

Effective date: August 19, 1974, if objections are not received.

(Secs. 103, 119, 201 and 202, Pub. L. 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1407, 1421 and 1422; delegations of authority at 49 CFR 1.51 and 49 CFR 501.8.)

Issued on July 11, 1974.

Francis Armstrong
Acting Associate Administrator
Motor Vehicle Programs

39 F.R. 26404
July 19, 1974

PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires

(Docket No. 74–38; Notice 1)

This amendment adds tire load ratings to 49 CFR 571.109 (Federal Motor Vehicle Safety Standard No. 109) and adds alternative rim sizes to 49 CFR 571.110 (Federal Motor Vehicle Safety Standard No. 110).

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions would be made to Appendix A, § 571.109 and to Appendix A, § 571.110. Under these guidelines the additions become effective 30 days from publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking procedures for the issuance of motor vehicle safety standards (49 CFR Part 553) are followed.

Accordingly, Appendix A of 49 CFR § 571.109 and Appendix A of 49 CFR § 571.110 are amended, subject to the 30-day provision indicated above . . . .

Effective date: November 21, 1974, if objections are not received.

(Secs. 103, 119, 201 and 202, Pub. L. 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1407, 1421 and 1422; delegations of authority at 49 CFR 1.51 and 49 CFR 501.8.)

Issued on October 16, 1974.

Robert L. Carter
Associate Administrator
Motor Vehicle Programs

39 F.R. 37489
October 22, 1974

PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires

(Docket No. 75–1; Notice 1)

This amendment adds certain tire size designations to 49 CFR 571.109 (Federal Motor Vehicle Safety Standard No. 109) and adds alternative and test rim sizes to 49 CFR 571.110 (Federal Motor Vehicle Safety Standard No. 110).

Guidelines were published in the *Federal Register* October 5, 1968 (33 F.R. 14964), and amended August 13, 1974 (39 F.R. 28980), specifying procedures by which routine additions are made to Appendix A, § 571.109 and to Appendix A, § 571.110. Under these guidelines the additions become effective 30 days from publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking procedures for the issuance of motor vehicle safety standards (49 CFR Part 553) are followed.

Accordingly, Appendix A of 49 CFR §571.109 and Appendix A of 49 CFR § 571.110 are amended, subject to the 30-day provision indicated above . . . .

Effective date: February 24, 1975, if objections are not received.

(Secs. 103, 119, 201 and 202, Pub. L. 89–563, 80 Stat, 15 U.S.C. 1392, 1407, 1421 and 1422; delegations of authority at 49 CFR § 1.51 and 49 CFR § 501.8.)

Issued on January 17, 1975.

Robert L. Carter
Associate Administrator
Motor Vehicle Programs

40 F.R. 3597
January 23, 1975

PREAMBLE TO AMENDMENT TO APPENDIX A OF MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires

(Docket No. 75–1; Notice 2)

This amendment adds certain tire size designations to 49 CFR 571.109 (Federal Motor Vehicle Safety Standard No. 109) and adds alternative and test rim sizes to 49 CFR 571.110 (Federal Motor Vehicle Safety Standard No. 110).

Guidelines were published in the *Federal Register* on October 5, 1968 (33 F.R. 14964), and amended August 13, 1974 (39 F.R. 28980), specifying procedures by which routine additions could be made to Appendix A, § 571.109 and to Appendix A, § 571.110. Under these guidelines the additions become effective 30 days from publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking procedures for the issuance of motor vehicle safety standards (49 CFR Part 553) are followed.

Accordingly, Appendix A of 49 CFR § 571.109 and Appendix A of 49 CFR § 571.110 are amended, subject to the 30-day provision indicated above. . . .

Effective date: August 2, 1975, if objections are not received.

(Secs. 103, 119, 201 and 202, Pub. L. 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1407, 1421 and 1422; delegation of authority at 49 CFR § 1.51 and 49 CFR § 501.8.)

Issued on June 26, 1975.

Robert L. Carter
Associate Administrator
Motor Vehicle Programs

40 F.R. 28457
July 7, 1975

PREAMBLE TO AMENDMENT TO APPENDIX A OF MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires

(Docket No. 75–1; Notice 3)

This amendment adds certain tire size designations to 49 CFR 571.109 (Federal Motor Vehicle Safety Standard No. 109).

Guidelines were published in the *Federal Register* on October 5, 1968 (33 F.R. 14964), and amended August 13, 1974 (39 F.R. 28980), specifying procedures by which routine additions could be made to Appendix A, § 571.109. Under these guidelines the additions become effective 30 days from publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking procedures for the issuance of motor vehicle safety standards (49 CFR Part 553) are followed.

Accordingly, Appendix A of 49 CFR § 571.109 is amended, subject to the 30-day provision indicated above. . . .

Effective date: December 15, 1975, if objections are not received.

(Secs. 103, 119, 201 and 202, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407, 1421 and 1422); delegations of authority at 49 CFR 1.51 and 49 CFR 501.8.)

Issued on November 6, 1975.

Robert L. Carter
Associate Administrator
Motor Vehicle Programs

40 F.R. 53033
November 14, 1975

PREAMBLE TO AMENDMENT TO APPENDIX A OF MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires

(Docket No. 75–1; Notice 2)

This amendment adds certain tire size designations to 49 CFR 571.109 (Federal Motor Vehicle Safety Standard No. 109).

Guidelines were published in the *Federal Register* on October 5, 1968 (33 F.R. 14964), and amended August 31, 1974 (39 F.R. 28980), specifying procedures by which routine additions could be made to Appendix A, § 571.109. Under these guidelines the additions become effective 30 days from publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking procedures for the issuance of motor vehicle safety standards (49 CFR Part 553) are followed.

Accordingly, Appendix A of 49 CFR § 571.109 is amended, subject to the 30-day provision indicated above. . . .

Effective date: February 23, 1976 if objections are not received.

(Secs. 103, 119, 201 and 202, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407, 1421 and 1422); delegations of authority at 49 CFR 1.50 and 59 CFR 501.8.)

Issued on January 20, 1976.

Robert L. Carter
Associate Administrator
Motor Vehicle Programs

41 F.R. 3870
January 27, 1976

PREAMBLE TO AMENDMENT TO APPENDIX A OF MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires

(Docket No. 75–1; Notice 2)

This amendment adds a new tire size designation to 49 CFR 571.109 (Federal Motor Vehicle Safety Standard No. 109).

Guidelines were published in the *Federal Register* on October 5, 1968 (33 FR 14964), and amended August 31, 1974 (39 FR 28980), specifying procedures by which routine additions could be made to Appendix A, § 571.109. Under these guidelines the additions become effective 30 days from publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking procedures for the issuance of motor vehicle safety standards (49 CFR Part 553) are followed.

Accordingly, Appendix A of 49 CFR § 571.109 is amended, subject to the 30-day provision indicated above. . . .

Effective date: May 22, 1976 if objections are not received.

(Sec. 103, 119, 201 and 202, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407, 1421 and 1422); delegations of authority at 49 CFR 1.50 and 49 CFR 501.8.)

Issued on April 19, 1976.

Robert L. Carter
Associate Administrator
Motor Vehicle Programs

41 F.R. 16804
April 22, 1976

PREAMBLE TO AMENDMENT TO APPENDIX A OF MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires

(Docket No. 76–3; Notice 3)

This amendment adds certain tire size designations to 49 CFR 571.109 (Federal Motor Vehicle Safety Standard No. 109).

Guidelines were published in the *Federal Register* on October 5, 1968 (33 FR 14964), and amended August 31, 1974 (39 FR 28980), specifying procedures by which routine additions could be made to Appendix A, § 571.109. Under these guidelines the additions become effective 30 days from publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking procedures for the issuance of motor vehicle safety standards (49 CFR Part 553) are followed.

Accordingly, Appendix A of 49 CFR § 571.109 is amended, subject to the 30-day provision indicated above. . . .

Effective date: October 18, 1976 if objections are not received.

(Secs. 103, 119, 201 and 202, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407, 1421 and 1422); delegations of authority at 49 CFR 1.50 and 49 CFR 501.8.)

Issued on September 10, 1976.

Robert L. Carter
Associate Administrator
Motor Vehicle Programs

41 F.R. 40473
September 20, 1976

PREAMBLE TO AMENDMENT TO APPENDIX A OF MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires

(Docket No. 76–3; Notice 4)

This amendment adds certain tire size designations to 49 CFR 571.109 (Federal Motor Vehicle Safety Standard No. 109).

Guidelines were published in the *Federal Register* on October 5, 1968 (33 FR 14964), and amended August 31, 1974 (39 FR 28980), specifying procedures by which routine additions could be made effective 30 days from publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking procedures for the issuance of motor vehicle safety standards (49 CFR Part 553) are followed.

Accordingly, Appendix A of 49 CFR § 571.109 is amended, subject to the 30-day provision indicated above. . . .

Effective date: February 22, 1977, if objections are not received.

(Secs. 103, 119, 201 and 202, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407, 1421 and 1422); delegations of authority at 49 CFR 1.50 and 49 CFR 501.8.)

Issued on January 12, 1977.

Robert L. Carter
Associate Administrator
Motor Vehicle Programs

42 F.R. 3844
January 21, 1977

PREAMBLE TO AMENDMENT TO APPENDIX A OF MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires

(Docket No. 77–02; Notice 1)

This amendment adds certain tire size designations to 49 CFR 571.109 (Federal Motor Vehicle Safety Standard No. 109).

Guidelines were published in the *Federal Register* on October 5, 1968 (33 CFR 14964), and amended August 31, 1974 (39 FR 28980), specifying procedures by which routine additions could be made effective 30 days from publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking procedures for the issuance of motor vehicle safety standards (49 CFR Part 553) are followed.

Accordingly, Appendix A of 49 CFR § 571.109 is amended subject to the 30 day provision indicated above, as specified below.

Effective date: March 14, 1977, if objections are not received.

(Secs. 103, 119, 201 and 202, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407, 1421, and 1422); delegations of authority at 49 CFR 1.50 and 49 CFR 501.8.)

Issued on February 4, 1977.

Robert L. Carter
Associate Administrator
Motor Vehicle Programs

42 F.R. 9022
February 14, 1977

PREAMBLE TO AMENDMENT TO APPENDIX A OF MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires

(Docket No. 77–02; Notice 2)

This amendment adds certain tire size designations to 49 CFR 571.109 (Federal Motor Vehicle Safety Standard No. 109, *New Pneumatic Tires—Passenger Cars*).

Effective date: July 11, 1977, if objections are not received.

For further information contact:

John Diehl
Office of Crash Avoidance
Motor Vehicle Programs
National Highway Traffic Safety Administration
400 Seventh Street, S.W.
Washington, D.C. 20590
(202–426–1715)

According to agency practice, regular amendments are published modifying the Appendix of Standard No. 109. Guidelines were published in the *Federal Register* on October 5, 1968 (33 FR 14964), and amended August 31, 1974 (39 FR 28980), specifying procedures by which routine additions could be made effective 30 days from publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking procedures for the issuance of motor vehicle safety standards (49 CFR Part 553) are followed.

The principal authors of this document are John Diehl, Office of Crash Avoidance, and Roger Tilton, Office of Chief Counsel.

Accordingly, Appendix A of 49 CFR § 571.109 is amended subject to the 30 day provision indicated above. . . .

(Secs. 103, 119, 201, and 202, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407, 1421, and 1422); delegations of authority at 49 CFR 1.50 and 49 CFR 501.8.)

Issued on June 3, 1977.

Robert L. Carter
Associate Administrator
Motor Vehicle Programs

42 F.R. 30620
June 16, 1977

PREAMBLE TO AMENDMENT TO APPENDIX A OF MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires

(Docket No. 77–02; Notice 3)

This amendment adds certain tire size designations to Standard No. 109, *New Pneumatic Tires—Passenger Cars.* This addition is made pursuant to a request from the European Tyre and Rim Technical Organisation to permit the production of tires with the specified designations.

Effective date: September 7, 1977, if objections are not received.

For further information contact:

John A. Diehl
Office of Crash Avoidance
Motor Vehicle Programs
National Highway Traffic Safety Administration
400 Seventh Street, S.W.
Washington, D.C. 20590
(202–426–1715)

Supplementary information: According to agency practice, regular amendments are published modifying the Appendix of Standard No. 109. Guidelines were published in the *Federal Register* on October 5, 1968 (33 F.R. 14964), and amended August 31, 1974 (39 F.R. 28980), specifying procedures by which routine additions could be made effective 30 days from publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking procedures for the issuance of motor vehicle safety standards (49 CFR Part 553) are followed.

The principal authors of this document are John A. Diehl, Office of Crash Avoidance, and Roger Tilton, Office of Chief Counsel.

Accordingly, Appendix A of 49 CFR § 571.109 is amended subject to the 30 day provision indicated above. . . .

(Secs. 103, 119, 201, and 202, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407, 1421, and 1422); delegations of authority at 49 CFR 1.50 and 49 CFR 501.8.)

Issued on August 1, 1977.

Robert L. Carter
Associate Administrator
Motor Vehicle Programs

42 F.R. 39984
August 8, 1977

PREAMBLE TO AMENDMENT TO APPENDIX A OF MOTOR VEHICLE SAFETY STANDARD NO. 109

(Docket No. 77–02; Notice 4)

This amendment adds certain tire size designations to Standard No. 109, *New Pneumatic Tires —Pasesnger Cars.* This addition is made pursuant to a request from the Rubber Manufacturers Association to permit the production of tires with the specified designations.

Effective date: September 7, 1977, if objections are not received.

For further information contact:

John A. Diehl
Office of Crash Avoidance
Motor Vehicle Programs
National Highway Traffic Safety Administration
400 Seventh Street, S.W.
Washington, D.C. 20590
(202–426–1715)

Supplementary Information: Accoring to agency practice, regular amendments are published modifying the Appendix of Standard No. 109. Guidelines were published in the *Federal Register* on October 5, 1968 (33 F.R. 14964), and amended August 31, 1974 (39 F.R. 28980), specifying procedures by which routine additions could be made effective 30 days from publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking procedures for the issuance of motor vehicle safety standards (49 CFR Part 553) are followed.

The principal authors of this document are John A. Diehl, Office of Crash Avoidance, and Roger Tilton, Office of Chief Counsel.

Accordingly, Appendix A of 49 CFR § 571.109 is amended subject to the 30 day provision indicated above. . . .

(Secs. 103, 119, 201, and 202, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407, 1421, and 1422); delegations of authority at 49 CFR 1.50 and 49 CFR 501.8).

Issued on August 1, 1977.

Robert L. Carter
Associate Administrator
Motor Vehicle Programs

42 F.R. 39983
August 8, 1977

PREAMBLE TO AMENDMENT TO APPENDIX A OF MOTOR VEHICLE SAFETY STANDARD NO. 109

(Docket No. 77–02; Notice 5)

This amendment adds certain tire size designations to Standard No. 109, *New Pneumatic Tires —Passenger Cars.* This addition is made pursuant to a request from the Rubber Manufacturers Association (RMA) to permit the production of tires with the specified designation. Effective Date: November 25, 1977, if objections are not received.

For Further Information Contact:

John A. Diehl, Office of Crash Avoidance, Motor Vehicle Programs, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590 (202–426–1715).

Supplementary Information: According to agency practice, regular amendments are published modifying the Appendix of Standard No. 109. Guidelines were published in the Federal Register on October 5, 1968 (33 FR 14964), and amended August 31, 1974 (39 FR 28980), specifying procedures by which routine additions could be made effective 30 days from publication in the Federal Register, if no objections are received. If objections are received, rulemaking procedures for the issuance of motor vehicle safety standards (49 CFR Part 553) are followed. The RMA petitioned for this addition to the tire tables to permit production of tires with the specified designation. Their request is granted.

Accordingly, Appendix A of 49 CFR § 571.109 is amended subject to the 30 day provision indicated above, as specified below. . . .

The principal authors of this document are John A. Diehl, Office of Crash Avoidance, and Roger Tilton, Office of Chief Counsel.

(Secs. 103, 119, 201, and 202, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407, 1421, and 1422); delegations of authority at 49 CFR 1.50 and 49 CFR 501.8)

Issued on October 17, 1977.

Robert L. Carter
Associate Administrator
Motor Vehicle Programs

42 F.R. 56333
October 25, 1977

PREAMBLE TO APPENDIX A OF FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires for Passenger Cars

(Docket No. 77–02; Notice 5)

Action: Final rule.

Summary statement: This amendment adds certain tire size designations to Standard No. 109, New Pneumatic Tires—Passenger Cars. The addition is made pursuant to a request from the Japan Automobile Tire Manufacturers Association to permit the production of tires with the specified designations.

Effective date: January 11, 1978, if objections are not received.

For further information contact:

John A. Diehl, Office of Crash Avoidance, Motor Vehicle Programs, National Highway Traffic Safety Administration, 400 Seventh Street, SW., Washington, D.C. 20590, 202–426–1715.

Supplementary information: According to agency practice, regular amendments are published modifying the Appendix of Standard No. 109. Guidelines were published in the FEDERAL REGISTER on October 5, 1968 (33 FR 14964), and amended April 31, 1974 (39 FR 28980), specifying procedures by which routine additions could be made effective 30 days from publication in the FEDERAL REGISTER, if no objections are received. If objections are received, rulemaking procedures for the issuance of motor vehicle safety standards (49 CFR Part 553) are followed. The Japan Automobile Tire Manufacturers Association petitioned for this addition to the tire tables to permit the production of tires with the specified designations.

The principal authors of this document are John A. Diehl, Office of Crash Avoidance, and Roger Tilton, Office of Chief Counsel.

Accordingly, Appendix A of 49 CFR 571.109 is amended, subject to the 30-day provision indicated above. . . .

(Secs. 103, 119, 201, and 202, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407, 1421, and 1422); delegations of authority at 49 CFR 1.50 and 49 CFR 501.8.)

Issued on December 7, 1977.

Robert L. Carter
Associate Administrator
Motor Vehicle Programs

42 F.R. 62386
December 12, 1977

PREAMBLE TO AMENDMENT TO APPENDIX A OF MOTOR VEHICLE SAFETY STANDARD NO. 109

(Docket No. 78–03; Notice 1)

This amendment adds certain tire size designations to Standard No. 109, *New Pneumatic Tires—Passenger Cars.* This addition is made pursuant to a request from the Rubber Manufacturers Association (RMA) to permit the production of tires with the specified designations.

Effective Date: March 8, 1978 if objections are not received.

For further information contact:

John A. Diehl, Crash Avoidance Division, Office of Vehicle Safety Standards, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590 (202–426–1715).

Supplementary Information: According to agency practice, regular amendments are published modifying the Appendix of Standard No. 109. Guidelines were published in the *Federal Register* on October 5, 1968 (33 F.R. 14964), an damended August 31, 1974 (39 F.R. 28980), specifying procedures by which routine additions could be made effective 30 days from publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking procedures for the issuance of motor vehicle safety standards (49 CFR Part 533) are followed. The RMA petitioned for thise addition to the tire tables to permit production of tires with the specified designations. This request is granted.

Accordingly, Appendix A of 49 CFR § 571.109 is amended subject to the 30 day provision indicated. . . .

The principal authors of this document are John A. Diehl, Office of Vehicle Safety Standards, and Roger Tilton, Office of Chief Counsel.

(Secs. 103, 119, 201, and 202, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407, 1421 and 1422); delegations of authority at 49 CFR 1.50 and 49 CFR 501.8.)

Issued on January 27, 1978.

Elwood T. Driver
Acting Associate Administrator
for Rulemaking

43 F.R. 4859
February 6, 1978

PREAMBLE TO AMENDMENT TO APPENDIX A OF MOTOR VEHICLE SAFETY STANDARD NO. 109

(Docket No. 78–03; Notice 2)

This amendment adds certain tire size designations to Standard No. 109, *New Pneumatic Tires—Passenger Cars*. This addition is made pursuant to a request from the Michelin Tire Corporation to permit the production of tires with the specified designations.

Effective Date: March 8, 1978, if objections are not received:

For further information contact:

John A. Diehl, Crash Avoidance Division, Office of Vehicle Safety Standards, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590 (202–426–1717).

Supplementary Information: According to agency practice, regular amendments are published modifying the Appendix of Standard No. 109. Guidelines were published in the *Federal Register* on October 5, 1968 (33 F.R. 14964), and amended August 31, 1974 (39 F.R. 28980), specifying procedures by which routine additions could be made effective 30 days from publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking procedures for the issuance of motor vehicle safety standards (49 CFR Part 553) are followed. The Michelin Tire Corporation petitioned for this addition to the tire tables to permit production of tires with the specified designations. This request is granted.

The principal authors of this document are John A. Diehl, Crash Avoidance Division, and Robert M. Churella, Office of Chief Counsel.

Accordingly, Appendix A of 49 CFR § 571.109 is amended subject to the 30 day provision indicated. . . .

(Secs. 103, 119, 201, and 202, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407, 1421, and 1422); delegations of authority at 49 CFR 1.50 and 49 CFR 501.8.)

Issued on January 27, 1978.

Elwood T. Driver
Acting Associate Administrator
for Rulemaking

43 F.R. 4860
February 6, 1978

PREAMBLE TO AMENDMENT TO APPENDIX A OF MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 78–04, Notice 2; Docket No. 78–03, Notice 4)

This notice amends Federal Motor Vehicle Safety Standard No. 109, *New Pneumatic Tires—Passenger Cars*, by adding four new metric tire size designations to Appendix A of the standard and by establishing criteria for testing and labeling higher inflation pressure tires. These amendments are made in response to petitions by the Goodyear Tire & Rubber Co. and the Rubber Manufacturers Association (RMA) in support of a Goodyear tire, and Michelin Tire Corp. The notice permits the introduction into interstate commerce of certain new metric-unit tires, one of which is a higher inflation tire enabling improved automobile fuel economy. The addition of the metric-unit tires accommodates the nation's conversion to the metric system, and the addition of the higher inflation tire also responds to the nation's need to conserve energy. This notice defers final action on proposals, issued in response to petitions by the RMA and Michelin Tire Corp., to amend the standard by adding two other new metric tire size designations to Appendix A.

Effective date: Date of publication of this notice in FEDERAL REGISTER, June 5, 1978.

For further information contact:

Arturo Casanova, Crash Avoidance Division, Office of Vehicle Safety Standards, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590, 202–426–1715.

Supplementary information: This notice establishes a final rule with respect to two separate rulemaking actions, one initiated pursuant to a petition by Michelin Tire Corp. (Michelin), and the other initiated pursuant to petitions by the Goodyear Tire & Rubber Co. (Goodyear) and the RMA.

In response to a petition by Michelin, (October 17, 1977), the NHTSA published a final rule (February 6, 1978; 43 FR 4859) amending Appendix A of Standard No. 109 by adding five new metric tire size designations under an abbreviated rulemaking procedure for expediting routine amendments to Appendix A tire tables. Guidelines for this procedure (October 5, 1968, 33 FR 14963; as amended May 4, 1971, 36 FR 8298; July 22, 1971, 36 FR 13601; and August 31, 1974, 39 FR 28980) provide that such additions may be made without being preceded by a notice of proposed rulemaking. However, if objections to a final rule are received within the 30 day comment period provided, the rule does not become effective. In this case regular rulemaking procedures for issuing and amending motor vehicle safety standards are initiated. Objections to the February 6, 1978, amendments were received. On April 3, 1978, the agency published a notice (43 FR 13903) proposing amendments of Standard No. 109 which would modify Appendix A by adding four new metric tire size designations and revise the table in Figure 1 of the standard by adding a new wheel size and its corresponding bead unseating test dimension. The proposed revisions of the table in Figure 1 are necessary to enable performance of the bead unseating test (section 4.2.2.3) on one of the proposed tire sizes.

In response to petitions from Goodyear (November 3, 1977) and the RMA (November 17, 1977) in support of a Goodyear tire, and from the RMA (January 17, 1978) in support of a Dunlop tire, the NHTSA published a notice (March 2, 1978; 43 FR 8570) proposing amend-

ments of Standard No. 109 which would modify Appendix A of the standard by adding two new metric tire size designations and modify the standard to allow a higher maximum inflation pressure and establish criteria for performance testing of higher inflation pressure tires.

All comments received on these notices have been considered and the most significant are discussed below.

For the reasons set forth below this notice (1) adopts the amendments proposed in the Michelin notice with respect to the addition to Appendix A of the new tire size designations 195/60R390, 180/65R390, and 190/65R390, requested by Michelin, (2) adopts the amendments proposed in the Goodyear-RMA notice with respect to the addition to Appendix A of the new tire size designation P215/65R390 requested by Goodyear and RMA in support of a Goodyear tire, and the modifications of the standard necessary to enable testing that tire, and (3) defers final action on (a) the amendments proposed in the Michelin notice to add the 180/65R365 tire size designation to Appendix A and to revise the table in Figure 1 of the standard to enable conducting the bead unseating test on this tire size, requested by Michelin, and (b) the amendment proposed in the Goodyear-RMA notice to add the P195/65R370 tire size designation to Appendix A, requested by RMA in support of a Dunlop tire.

Goodyear, Dunlop, and Michelin Tires: Intermix. The nation's gradual conversion from the English system of measurement to the metric system is reflected in the current proposals to add metric tire size designations to Appendix A tire tables. Some similarity in size between existing English-unit tires and new metric-unit tires requested seems inevitable during the conversion. However, the problems posed by conversion, if any, should be temporary, i.e., limited to the transition phase.

Comments objecting to the addition of each of the new metric tire size designations proposed in the Michelin and Goodyear-RMA notices alleged that "intermix" or "mismatch" problems could accidentally occur when replacing a tire in the course of vehicle use. Some commenters asserted that, because the nominal diameters of the proposed metric tires and corresponding metric rims (365mm, 370mm, and 390mm) are very nearly the same as those of certain existing English-unit tire/rim diameters (14 inch, 15 inch, and 16 inch), it would be technically possible to mount an English-unit tire on a requested metric unit rim, or conversely to mount a metric-unit tire on an existing English-unit rim. Some commenters alleged that serious safety problems, such as tire explosion during, or road failures shortly after tire mounting could occur as a result of such intermixing. General Motors (GM) and the Armstrong Rubber Company (Armstrong) directed such allegations to all of the requested tires in both notices, and the Department of California Highway Patrols directed this objection to the Michelin requests. Other commenters predicted that tire/rim mismatches could occur among certain combinations of the new metric tire and rim sizes proposed for amendment of Standard No. 109, should all proposed amendments be adopted. However, none of the objections summarized above were supported by data demonstrating the safety hazards alleged, or even demonstrating that a tire could actually be mounted on an inappropriate rim and hold air.

GM requested that the NHTSA defer action on all the proposed new tire sizes for one year to allow the tire and vehicle industries to work out a general solution to potential intermix problems raised by these and other metric tires requested later. Dunlop requested that the NHTSA take no final action on the tires proposed in both notices without considering the potential safety hazards involved. The Department of California Highway Patrol recommended that the trend of proliferation of tire sizes be eliminated from the passenger car tire market in view of potential safety problems suggested. Mercedes-Benz asserted that the differences among the proposed tires were sufficient to prevent intermix, but that the anticipated introduction of additional tire-rim combinations raised the possibility of mismatch problems. Mercedes stated that the anticipated proliferation of metric tire sizes raised the prospect that the spare parts industry might not expand quickly enough to meet aftermarket needs, in view of the fact that a vehicle owner would need to replace his tires with the same type tire originally mounted. Mercedes suggested that the NHTSA encourage the devel-

opment of uniform and interchangeable tires and rims. Armstrong objected to the Michelin and Goodyear proposals because of alleged confusion to the public and tire service personnel arising from the slight dimensional differences in metric and English tire/rim combinations.

Other persons submitted that no intermix problems were posed by the proposed tires. Chrysler Corporation stated that the P215/65R390 Goodyear tire raised no unique tire/rim intermix issues, but submitted no supporting data. Goodyear stated that its proposed metric tire and JM rim were designed with an objective of preventing misapplication with existing tires and rims. Goodyear submitted data on a series of automatic and hand tire-mounting trials conducted by the Tire and Rim Association (T&RA) on an earlier version of the 390 JM rim associated with this tire. The data, together with data submitted on the JM contour, demonstrated that the designated maximum well-depth of the 390 JM rim design precluded misapplication of 15 inch tires on it. Goodyear also submitted that while the Goodyear 390 mm tire (15.35 inches) can be mounted on a standard 15-inch rim, it will not hold air because flutes molded into the lower bead area of the tire bleed out air. No supporting data was provided. Ford submitted data on intermix tests conducted by Goodyear in conjunction with the T&RA on the precursor of the requested Goodyear tire and rim, and also data on tests conducted by Ford on the 390 mm tire requested by Goodyear and on the 390 mm TR rim requested by Michelin for use with its requested 390 mm tires. Test results were (1) that a 15 inch tire could not be mounted on the precursor to the JM rim or on the TR rim, and (2) that the Goodyear tire could be mounted on a 15 inch rim, but that the molded flutes or "blow-by" feature of the Goodyear tire bead prevented the formation of an air-tight seal. Based on test results, Ford supported approval of the 390 mm Goodyear and Michelin tires, but recommended that Standard No. 109 be amended to require this "blow-by" feature on metric tires to prevent misapplication with English-unit rims. Saab-Scania submitted that it had attempted to mount a 15 inch tire on the Michelin 390 mm TR rim and found it impossible; and that while its attempts to mount the 390 mm Michelin tire on a 15 inch JJ rim were successful, the tire could not be inflated.

The intermix concerns of several commenters would have been more appropriately raised in a petition for rulemaking that addressed any safety problems demonstrated as caused by intermixing inappropriate tires and rims. Alternatively, the concern could have been raised in a petition to commence an investigation to determine whether the size or configuration of the tires and rims constituted, in light of the alleged possibility of intermix and associated safety hazard, a safety related defect. On its own initiative, the agency is preparing to issue an advanced notice of proposed rulemaking on this subject. In view of its responsibility and broad authority under the Act to deal with safety problems, the agency believed that the allegation of intermix problems with respect to the current proposals to add new metric tires to Standard No. 109 warranted immediate inquiry. Accordingly, the agency initiated a program to test the intermix potential of these tires and associated rims with existing English-unit tires and rims, i.e., to test whether the proposed tires can be mounted on existing rims, or existing tires mounted on the proposed rims, and if so, whether safety hazards are found during mounting or on-road use.

In response to a request by the NHTSA, Goodyear submitted the 390 mm P215/65R390 tire and 390 mm JM rim, and Michelin submitted one of its 390 mm tires, the 190/65R390 tire and the 390 mm TR rim. Dunlop and Michelin stated they would not be able to submit the 370 mm P195/65R370 and the 365 mm 180/65R365 tires, respectively, until a later date.

The NHTSA tests conducted at the agency's Safety Research Laboratory in Riverdale, Maryland corroborated the test data submitted in support of the proposed 390 mm Goodyear and Michelin tires and rims, as summarized above. A standard 15 inch tire could not be intermixed with either the 390 mm JM or the 390 mm TR rim, because the well-depths established for these rims precluded mounting the tire. While the 390 mm Goodyear and Michelin tires submitted could be mounted on the existing 15 inch JJ contour rim, the special "flutes" incorporated on the bead seal area of each of these tires prevented the tire

from holding air. Although comments alleged potential intermix problems relative to the requested 390 mm tires and rims and the 16 inch tire and 16 inch JJ rim, this allegation is academic since no 16 inch tires have ever been designed or produced for the 16 inch JJ rim. (Original equipment use of 16 inch passenger car tires included in Standard No. 109 tire tables was discontinued during the mid 1950s, and the JJ rim contour was not introduced until 1967.)

The Michelin 195/60R390 and 180/65R390 tires with their associated 390 mm JM or TR rims were not submitted for testing. However, the results of the tests performed on the Michelin and the Goodyear tires submitted and on their associated rims are conclusive with respect to the intermix potential of these two proposed Michelin tires and rims. This is because all four tires and associated rims are the same with respect to the variables found to be critical in preventing inappropriate intermixing of the tested tires and rims. The critical variables are: the nominal diameter of the tire and rim, or 390 mm for all four tires and associate rims; rim contour, e.g., TR or JM, which determines well-depth; and tire "flutes" molded into the tire bead. The nominal diameters of the tire and rim of the fourth Michelin tire requested, the 180/65R365 (365 mm), and of the requested Dunlop tire, the P195/65R370 (370 mm), are different from those tested. Another difference characterizing the Dunlop tire is the proposed DL rim contour. Therefore the NHTSA tests conducted to date are not conclusive as to whether either of these two tires and their associated rims can be intermixed with existing rims and tires, or intermixed one with the other, and if so, what any consequences of any such intermix might be.

The agency decided to proceed with final rulemaking action on all of the 390 mm tires proposed. The agency decided to defer final rulemaking on the 370 mm Dunlop tire and the 365 mm Michelin tire until agency intermix tests are performed on these tires.

The Michelin Tires: Information Submitted for Inclusion in Appendix A Tire Tables. The bases for accepting or denying requests to add new tire size designations to Table I of Appendix A of Standard No. 109 are set forth in introductory guidelines to the appendix (October 5, 1968, 33 FR 14964, as amended May 4, 1971, 36 FR 8298; July 22, 1971, 36 FR 13601; August 13, 1974, 39 FR 28980). In sum, the tests are appropriateness of the values submitted for inclusion in the tire tables, and appropriateness of the requested location within the tables of the requested tires.

As discussed in the April 3 Michelin notice, GM objected to the absence of a prefix "P" for 4 of the 5 new tire sizes requested by Michelin published in the February 6 Michelin notice. GM urged that this prefix be made mandatory to distinguish International Standards Organization (ISO) metric tire size designations from other metric tire size designations. The ISO standard for "Passenger car tyres and rims (Future series) Part 1: Tyres" states:

> This symbol ("P") may be used where there may be ambiguity regarding the tyre type. Where the optional marking is used, it should be so positioned that confusion cannot result from its proximity to any other service condition marking.

GM's comments noted that according to the practice of the T&RA, the prefix "P" is required to distinguish ISO metric size designations from other metric designations, even though the ISO standard makes use of the prefix optional. The NHTSA is of course not bound by the standards or practice of either organization. Neither the ISO nor the T&RA submitted comments discussing long-range effects of mandating the use of the prefix. Neither GM nor anyone else elaborated a rationale for preferring the T&RA practice to the ISO standard. Further, Michelin's response to the GM comment asserted that the tires requested in the April 3 Michelin notice have been and are currently marketed in Europe, where they are not designated by the prefix "P". In the absence of any rationale for mandating nomenclature to distinguish ISO metric tire designations from other metric tire sizes, in the absence of any data on or discussion of any ambiguity resulting from the nomenclature as proposed, and in the interest of maintaining consistency between European and U.S. nomenclature for the tire, the agency concludes that the absence of the prefix "P" is not inappropriate.

This conclusion is consistent with the fact that Table I–Y in Appendix A already lists a metric tire size designation which does not use the prefix "P". (195/60R350) Therefore, the agency accepts the tire size nomenclature requested by Michelin, as proposed.

Armstrong objected to the inclusion of the Michelin 195/60R390 and P205/60R390 tires as not being compatible with existing Standard No. 109 tire tables and as not having been approved by any technical standardizing body. Michelin subsequently withdrew its request to add the P205/60R390 tire to the standard. Under Appendix A guidelines, the test of compatibility is applicable to requests for addition of new tire sizes to existent tire tables. Where, as here, additional new tables for new tire construction are requested, the applicable test is "adequate justification" for the new tables. The NHTSA finds that there is adequate justification for the proposed new tables I–NN and I–PP precisely because the constructions of the new metric tires requested for inclusion in the new tables are distinguishable from those of tires in existing tables. Appendix A guidelines do not require approval of requested tire sizes by a recognized technical standardizing body, but only "A statement as to whether the tire size designation has been coordinated with" the organizations listed (guideline #4). Michelin submitted such a statement with respect to its requested metric tire size designations.

In the April 3 Michelin notice, the NHTSA requested comments on the alternative use of JM and TR rim profiles in conjunction with any of the requested Michelin metric tires, as proposed in that notice. JM is a metric rim profile established by the T&RA (October 7, 1977, "Design Guide of Tire and Rim Association"). TR is a metric rim profile established by the European Tyre and Rim Technical Organization (ETRTO) (1978 ETRTO Data Book, p. RP.11). Armstrong commented that the concurrent existence of the JM and TR rims on the market would entail potential safety-related consequences. Armstrong asserted that the "snap-in" valve used for the JM rim, with its 8.9mm (.350 inch) diameter valve hole specification, could accidentally be fitted into the TR valve hole, with its 10.0mm (.394 inch) diameter specification. The result would be loss of inflation pressure. Michelin has subsequently informed the NHTSA that it will petition the ETRTO to adopt a 8.9mm diameter valve hole dimension for the TR rim.

No commenter specifically addressed the issue of the alternative use of the JM and TR rim contours. NHTSA analysis of these contours indicates that, with the Michelin change to the 9mm valve hole dimension, the remaining differences between the two rims are insignificant in terms of their equivalent appropriateness for use in mounting any of the metric size tires requested by Michelin.

Armstrong raised a number of points alleged to safety-related weaknesses in the "snap-in" valve design of the JM rim. In comments on the February 6 Michelin notice, Armstrong had alleged that safety problems could also arise from the potential accidental installation of an English-unit valve in the TR valve hole, resulting in loss of inflation pressure. Such considerations of the potential consequences of the use of the rims requested in conjunction with the requested new tire size designations fall outside the permissible bases of agency denial of requests to amend Appendix A tire tables. The appropriate course of action is to submit a petition for rulemaking to establish or amend a standard to address the issues. Accordingly, the alternative use of the JM and TR rims in conjunction with the proposed Michelin tires is adopted, as proposed.

The Goodyear Tire: Fuel Economy, Vehicle Ride and Handling, and Labeling. The amendment of Standard No. 109 as proposed in the Goodyear-RMA notice would increase the maximum permissible inflation pressure permitted under the standard to 300 kPa (44 psi) and make conforming amendments throughout the standard to establish test criteria to enable conducting the standard's various performance tests on the proposed tire. The notice proposed that tire performance tests be established at the same load levels as prescribed for the 240 kPa (35 psi) tire, based on the agency's tentative conclusion that these load levels represent test conditions more severe than would result from utilization of a higher test inflation pressure, so that the safety of the tire is better assured. No comments were submitted addressing this point. Accordingly, the agency adopts these amendments as proposed.

The Goodyear new tire size designation P215/65R390 meets the criteria set forth in introductory guidelines to Appendix A for adding new tire sizes to Appendix A tire tables. Accordingly, the proposed amendment of Appendix A of Standard No. 109 adding this new tire size is adopted, as proposed.

Comments and data were submitted on the issue of the potential of the proposed higher inflation pressure tires to enable improved fuel economy in vehicle use compared to the potential of existing tires to enable improved vehicle fuel economy when tested under higher inflation pressures. All commenters agreed that the higher inflation pressure design of the requested Goodyear tire provides lowered rolling resistance, which enables improved fuel economy in vehicle use. Other comments and data were submitted in regard to ride quality and handling characteristics of vehicles using the proposed higher inflation pressure tires. All of these comments relate to issues which fall outside the ambit of Appendix A.

GM submitted that the addition of the Goodyear tire to Standard No. 109 necessitated an amendment of the labeling requirements of S4.3 of the standard to specify pressure at maximum load rating, in order to distinguish this pressure from maximum permissible inflation pressure where these two values do not correspond. Standard No. 109 requires labeling of maximum load rating and of maximum permissible inflation pressure. With respect to existing tires, values for maximum load rating and for maximum permissible inflation pressure always correspond. With respect to the Goodyear tire, there may be several inflation pressures for the maximum load rating. However, the maximum permissible inflation pressure for the Goodyear tire is always an appropriate inflation pressure for the maximum load rating. The labeling requirements do not purport to cover all possible inflation pressures and load ratings, but only the most extreme (i.e. "maximum") conditions under which it is safe to operate a tire. Since the information on these maximum conditions for inflation pressure and load ratings must be labeled on the Goodyear tire, it is unnecessary to amend the labeling requirements as requested.

In accordance with the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)(c)) and Executive Order 12044, the NHTSA has reviewed the environmental and economic impacts of these amendments. There should be no negative environmental impacts. Further, since these are minor technical amendments of the standard which will permit the production of four new tire sizes, there should be no costs associated with their implementation. The agency has further concluded that this is not a significant regulation within the meaning of the Executive Order.

In consideration of the foregoing, Title 49 of the Code of Federal Regulations, Part 571.109 (Standard No. 109, *New Pneumatic Tires-Passenger Cars*) is amended. . . .

The principal authors of this notice are Arturo Casanova of the Crash Avoidance Division, John Diehl of the Tire Performance Group, and Nancy Eager of the Office of Chief Counsel.

(Secs. 103, 119, 201, and 202, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407, 1421, and 1422); delegations of authority at 49 CFR 1.50 and 49 CFR 501.8.)

Issued on May 30, 1978.

Howard Dugoff
Acting Administrator

43 F.R. 24310–24314
June 5, 1978

PREAMBLE TO AMENDMENT TO APPENDIX A OF MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 78–03; Notice 5)

Pursuant to petitions by the European Tyre and Rim Technical Organisation (ETRTO) and by the Rubber Manufacturers Association (RMA), this notice amends Federal Motor Vehicle Safety Standard No. 109, *New Pneumatic Tires—Passenger Cars*, by adding ten new tire size designations to Table I of Appendix A of the standard. The amendment permits the introduction into interstate commerce of the new tire sizes.

Effective date: 30 days from publication in the FEDERAL REGISTER, if objections are not received prior to that date.

Address: Comments should refer to the docket number and be submitted to Room 5108, Nassif Building, 400 Seventh Street, S.W., Washington, D.C. 20590.

For further information contact:

John Diehl, Office of Automotive Ratings, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20690, 202–426–1714.

Supplementary information: According to agency practice, the National Highway Traffic Safety Administration (NHTSA) responds to petitions for adding new tire sizes to Table I of Appendix A of Standard No. 109 by quarterly issuing final rules under an abbreviated rulemaking procedure for expediting such routine amendments. Guidelines for this procedure (October 5, 1968, 33 FR 14964, as amended May 4, 1971, 36 FR 8298; July 22, 1971, 36 FR 13601; and August 13, 1974, 39 FR 28980) provide that these final rules become effective 30 days after their date of publication if no comments objecting to them are received by the agency during this 30-day period. If objections are received, regular rulemaking procedures for issuing and amending motor vehicle safety standards (49 CFR Part 553) are to be initiated.

On March 20, 1978, the ETRTO petitioned for the addition of four new English-unit tire size designations to existing tables within Table I of Appendix A of Standard No. 109. On (April 11, 1978, April 25, 1978, May 25, 1978, and June 16, 1978) the RMA petitioned for the addition of six new English-unit tire size designations to existing tables within Table I of Appendix A of Standard No. 109. The bases for accepting or denying requests to add new tire size designations are set forth in introductory guidelines to the appendix (October 5, 1968, 33 FR 14964, as amended May 4, 1971, 36 FR 8298; July 22, 1971, 36 FR 13601; and August 13, 1974, 39 FR 28980). In sum, the tests are appropriateness of the information submitted for inclusion in the tire tables, and appropriateness of the requested location within the tables of the requested tire sizes. The ten new tire size designations requested to be added to Standard No. 109 meet these criteria. Accordingly, the ETRTO and the RMA petitions are granted, and the ten new tire size designations are added to Table I of Appendix A of the standard pursuant to the abbreviated rulemaking procedure.

In accordance with the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)(c)) and Executive Order 12044, the NHTSA has reviewed the environmental and economic impacts of these amendments. There should be no negative environmental impacts. Further, since these are minor technical amendments of the standard which will permit the production of four new

tire sizes, there should be no costs associated with their implementation. The agency has further concluded that this is not a significant regulation within the meaning of the Executive Order.

In consideration of the foregoing, Title 49 of the Code of Federal Regulations (Part 571.109 (Standard No. 109, *New Pneumatic Tires—Passenger Cars*)) is amended....

All comments submitted must be limited to 15 pages in length. Necessary attachments may be appended to these submissions without regard to the 15-page limit. This limitation is intended to encourage commenters to detail their primary arguments in a succinct and concise fashion. It is requested but not required that 10 copies of comments be submitted.

If a commenter wishes to submit certain information under a claim of confidentiality, three copies of the complete submission, including purportedly confidential information, should be submitted to the Chief Counsel, NHTSA, at the address given above, and seven copies from which the purportedly confidential information has been deleted should be submitted to the Docket Section. Any claim of confidentiality must be supported by a statement demonstrating that the information falls within 5 U.S.C. Section 552(b)(4), and that disclosure of the information is likely to result in substantial competitive damage; specifying the period during which the information must be withheld to avoid that damage; and showing that earlier disclosure would result in that damage. In addition, the commenter or, in the case of a corporation, a responsible corporate official authorized to speak for the corporation must certify in writing that each item for which confidential treatment is requested is in fact confidential within the meaning of section 552(b)(4) and that a diligent search has been conducted by the commenter or its employees to assure that none of the specified items has previously been released to the public.

The principal authors of this notice are John Diehl of the Tire Performance Group and Nancy Eager of the Office of Chief Counsel.

(Sec. 103, 119, 201, and 202, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407, 1421, and 1422); delegations of authority at 49 CFR 1.50 and 49 CFR 501.8.)

Issued on September 25, 1978.

Michael M. Finkelstein
Acting Associate Administrator
for Rulemaking

43 F.R. 45366
October 2, 1978

PREAMBLE TO AMENDMENT TO APPENDIX A OF MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 78–17; Notice 1)

Pursuant to petitions by the Michelin Tire Corporation (Michelin) and by the Rubber Manufacturers Association (RMA), this notice amends Federal Motor Vehicle Safety Standard No. 109, *New Pneumatic Tires—Passenger Cars*, by adding four new tire size designations to Table I of Appendix A of the standard. The amendment permits the introduction into interstate commerce of the new tire sizes.

Effective date: 30 days from publication in the FEDERAL REGISTER, if objections are not received prior to that date.

Address: Comments should refer to the docket number and be submitted to Room 5108, Nassif Building, 400 Seventh Street, S.W., Washington, D.C. 20590.

For further information contact:

John Diehl, Office of Vehicle Safety Standards, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590 (202–426–1714).

Supplementary information: According to agency practice, the National Highway Traffic safety Administration responds to petitions for adding new tire sizes to Table I of Appendix A of Standard No. 109 by quarterly issuing final rules under an abbreviated rulemaking procedure for expediting such routine amendments.

On July 13, 1978, Michelin petitioned for the addition of two new tire size designations requested to be located in a new table, I–QQ within Appendix A of Standard No. 109. On July 18, 1978, and August 3, 1978, the RMA petitioned for the addition of two new tire size designations to existing tables within Table I of Appendix A of the standard. The bases for accepting or denying requests to add new tire size designations are set forth in introductory guidelines to the appendix (October 5, 1968, 33 FR 14964, as amended May 4, 1971, 36 FR 8298; July 22, 1971, 36 FR 13601; and August 13, 1974, 39 FR 28980). The four new tire size designations requested to be added to Standard No. 109 meet these criteria. Accordingly, the Michelin and the RMA petitions are granted, and these new tire size designations are added to Table I of Appendix A of the standard pursuant to the abbreviated rulemaking procedure.

In accordance with the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)(c) and Executive Order 12044, the NHTSA has reviewed the environmental and economic impacts of these amendments. There should be no negative environmental impacts. Further, since these are minor technical amendments of the standard which will permit the production of four new tire sizes, there should be no costs associated with their implementation. The agency has further concluded that this is not a significant regulation within the meaning of the Executive Order.

In consideration of the foregoing, Title 49 of the Code of Federal Regulations (Part 571.109 (Standard No. 109, *New Pneumatic Tires—Passenger Cars*)) is amended. . . .

All comments must be limited not to exceed 15 pages in length. Necessary attachments may be appended to these submissions without regard to the 15-page limit. This limitation is intended to encourage commenters to detail their primary arguments in a succinct and concise fashion. It is requested but not required that 10 copies of comments be submitted.

If a commenter wishes to submit certain information under a claim of confidentiality, three copies of the complete submission, including purportedly confidential information, should be submitted to the Chief Counsel, NHTSA, at the address given above, and seven copies from which the purportedly confidential information has been deleted should be submitted to the Docket Section. Any claim of confidentiality must be supported by a statement demonstrating that the information falls within 5 U.S.C. section 552(b)(4), and that disclosure of the information is likely to result in substantial competitive damage; specifying the period during which the information must be withheld to avoid that damage; and showing that earlier disclosure would result in that damage. In addition, the commenter or, in the case of a corporation, a responsible corporate official authorized to speak for the corporation must certify in writing that each item for which confidential treatment is requested is in fact confidential within the meaning of section 552(b)(4) and that a diligent search has been conducted by the commenter or its employees to assure that none of the specified items has previously been released to the public.

All comments received before the close of business on the comment closing date indicated above will be considered, and will be available for examination in the docket at the above address both before and after that date.

The principal authors of this notice are John Diehl of the Office of Vehicle Safety Standards and Nancy Eager of the Office of Chief Counsel.

(Sec. 103, 119, 201, and 202, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407, 1421, and 1422); delegations of authority at 49 CFR 1.50 and 49 CFR 501.8.)

Issued on November 27, 1978.

Michael M. Finkelstein
Associate Administrator
for Rulemaking

43 F.R. 56668–56671
December 4, 1978

PREAMBLE TO AMENDMENT TO APPENDIX A OF FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires for Passenger Cars

(Docket No. 79–01; Notice 1)

Action: Final rule.

Summary: Pursuant to petitions by the Rubber Manufacturers Association (RMA), European Tyre and Rim Technical Organisation (ETRTO), and Michelin Tire Corporation (Michelin), this notice amends Federal Motor Vehicle Safety Standard No. 109, *New Pneumatic Tires—Passenger Cars*, by adding certain tire size designations to Appendix A of the standard. This amendment permits the introduction into interstate commerce of the new tire sizes.

Effective date: 30 days from the date of publication in the FEDERAL REGISTER, if objections are not received before that date.

Address: Comments should refer to Docket 79–01 and be submitted to Docket Section, Room 5108, 400 Seventh Street, S.W., Washington, D.C. 20590.

For further information contact:

John Diehl, Office of Vehicle Safety Standards, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590 (202–426–1714).

Supplementary information: According to agency practice, the National Highway Traffic Safety Administration (NHTSA) responds to petitions for adding new tire sizes to Table I of Appendix A of Standard No. 109 by quarterly issuing final rules under an abbreviated rulemaking procedure for expediting such routine amendments. Guidelines for this procedure were published at 33 FR 14964, October 5, 1968 and amended at 36 FR 8298, May 4, 1971; 36 FR 13601, July 22, 1971; and 39 FR 28980, August 13, 1974. These guidelines provide that these final rules become effective 30 days after their date of publication if no comments objecting to them are received by the agency during this 30 day period. If objections are received, regular rulemaking procedures for issuing and amending motor vehicle safety standards are initiated.

ETRTO petitioned for the addition of a new tire size to an existing table within Table I of Appendix A of Standard No. 109 on September 28, 1977. On October 24, 1978, Michelin petitioned for the addition of a new P-metric series tire size to an existing table within Table I of Appendix A of Standard No. 109. On November 1, 1978, and December 1, 1978, RMA filed petitions requesting the addition of five new P-metric tire sizes to the existing tables. The basis for accepting or denying requests to add new tire size designations is set forth in introductory guidelines to the appendix. Briefly, the tests are the appropriateness of the information submitted for inclusion in the tire tables, and appropriateness of the requested location within the tables of the requested tire sizes. The seven new tire size designations requested to be added to Standard No. 109 appear to meet these criteria. Accordingly, the Michelin, ETRTO, and RMA petitions are granted, and the seven new tire size designations are added to Table I of Appendix A of the standard pursuant to the abbreviated rulemaking procedure.

In consideration of the foregoing, 49 CFR § 571.109 is amended . . . subject to the 30 day comment period outlined above.

Interested persons are invited to submit comments on these additions. Comments must be limited so as not to exceed 15 pages in length. Necessary attachments may be appended to these

submissions without regard to the 15 page limit. This limitation is intended to encourage commenters to detail their primary arguments in a succinct and concise fashion.

The agency has reviewed the impacts of this proposal and determined that they are minimal and that this is not a significant regulation within the meaning of Executive Order 12044.

The program official and attorney principally responsible for the development of this notice are John Diehl and Stephen Kratzke, respectively.

AUTHORITY: Secs. 103, 119, 201, and 202, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407, 1421, and 1422); delegations of authority at 49 CFR 1.50 and 49 CFR 501.8.

Issued on February 21, 1979.

Michael M. Finkelstein
Associate Administrator
for Rulemaking

44 F.R. 11549
March 1, 1979

PREAMBLE TO AMENDMENT TO APPENDIX A OF FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 77–02; Notice 7)

Action: Final rule.

Summary: This notice grants in part and denies in part a petition submitted by the Japan Automobile Tire Manufacturers Association requesting the addition of two new tire size designations to Appendix A of Federal Motor Vehicle Safety Standard No. 109, *New Pneumatic Tires Passenger Cars.* The requested sizes have been redesignated using the alpha numeric system, because if the metric system were used, the values given for these tires would differ from those agreed upon by the International Organization for Standardization. When the alpha numeric system of designating tire sizes is used, one of the requested tire sizes duplicates a size currently included in the Appendix. Inclusion of that size again is unnecessary and therefore the request is denied. The request for inclusion of the other tire size is granted. Promulgation of this final rule permits the introduction of that size into interstate commerce.

Effective date: May 10, 1979.

For further information contact:

John Diehl, Office of Automotive Ratings, Crash Avoidance Division, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590 (202–426–1714).

Supplementary information: According to agency practice, the National Highway Traffic Safety Administration (NHTSA) respond to petitions for adding new tire sizes to Appendix A of Standard No. 109 by quarterly issuing final rules under an abbreviated rulemaking procedure for expediting such routine amendments. Guidelines for this procedure (33 FR 14964, October 5, 1968, as amended at 39 FR 28980, August 13, 1974) provide that these final rules become effective 30 days after their date of publication if no comments objecting to them are received by NHTSA during this 30-day period. If objections are received, rulemaking procedures for proposing and issuing motor vehicle safety standards (49 CFR Part 553) are to be initiated.

Pursuant to a petition from the Japan Automobile Manufacturers Association (July 26, 1977), a final rule amending Appendix A by adding two new tire size designations was published at 42 FR 62386, December 12, 1977, using the abbreviated rulemaking procedure. An objection to this amendment was timely submitted by General Motors Corp. (GM) on January 11, 1978. Accordingly, the amendment did not become effective.

NHTSA published a notice of proposed rulemaking on this addition at 43 FR 22420, May 25, 1978. In response to that notice, comments on the proposed tire sizes were submitted by GM and the B.F. Goodrich Company (Goodrich).

The petition had requested that two tire sizes, 225/60R13 and 225/60R14, be added to the appendix. GM and Goodrich both commented that the proposed millimetric 225/60R14 size designation was already included in Table I–R, under the alpha numeric designation of DR 60–14. A millimetric size designation describes the tire's cross-section width in millimeters, while the alpha numeric system describes the tire's cross-section width in inches. All the tire loads and other values for the requested 225/60R14 tire size were identical with those already listed for the DR 60–14 size. The commenters suggested that it would be most appropriate for NHTSA to add the values for the requested 225/60R13 size, but

designate this size as DR 60–13, and deny the request with respect to the 225/60R14 size, since that size already appears in the tables.

There were two reasons offered in the comments for redesignating the requested tire sizes from 225/60R13 and 225/60R14 to DR 60–13 and DR 60–14. First, according to the commenters, the test rim widths and section widths requested by the petitioner for those tire sizes did not agree with the test rim widths and section widths agreed upon for those size tires by the International Organization for Standardization. Second, the commenters stated that consistency with international standardization efforts required the load values for the requested sizes to be expressed in kilograms and kilo Pascals, rather than in pounds and pounds per square inch, as proposed. There would be no inconsistency with the international standardization efforts for tire size designations if the tire sizes were redesignated as shown above.

NHTSA concurs with the suggestion that the international standardization of tire size designations is a desirable goal. When this can be promoted without any unduly great burden to the manufacturers or the public, NHTSA will generally follow this course. With respect to this petition, a redesignation of the tire sizes does not impose any significant burden on the manufacturers. The redesignation allows the tires to be sold without any further computation of values or testing by the manufacturer. Therefore, the benefits to be gained from harmonization of tire size designations outweighs the minimal burden imposed on the manufacturer by having to redesignate these tire sizes.

With this redesignation, the requested new tire sizes 225/60R13 and 225/60R14 become DR 60–13 and DR 60–14. The request for the DR 60–13 size is granted with the values proposed in the notice of proposed rulemaking for the 225/60R13 size. The request for the DR 60–14 size is denied, because that size is already included in Table I–R of the Appendix to Standard No. 109.

In consideration of the foregoing, Title 49 of the Code of Federal Regulations, Part 571.109 is amended. . . .

NHTSA has reviewed this rule and determined that it is not a significant regulation within the meaning of Executive Order 12044. Further this action does not require an environmental impact statement under the National Environmental Policy Act (49 U.S.C. 4321 *et seq.*).

The program official and attorney principally responsible for the development of this rule are John Diehl and Stephen Kratzke, respectively.

AUTHORITY: Secs. 103, 109, 201, and 202, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407, 1421, and 1422); delegation of authority at 49 CFR 1.50.

Issued on May 1, 1979.

Joan Claybrook
Administrator

44 F.R. 27395
May 10, 1979

PREAMBLE TO AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 78–03; Notice 6; Docket No. 78–04; Notice 3)

Action: Final rule.

Summary: This notice amends Federal Motor Vehicle Safety Standard No. 109, *New Pneumatic Tires—Passenger Cars*, by adding two new metric tire size designations to Appendix A of that Standard. These amendments are made in response to petitions by Michelin Tire Corporation and the Rubber Manufacturers Association (RMA). Issuance of this notice permits the introduction of these metric tire sizes into interstate commerce.

Effective date: May 10, 1979.

For further information contact:

Arturo Casanova, Crash Avoidance Division, Office of Vehicle Safety Standards, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590 (202–426–1715).

Supplementary information: This notice establishes a final rule with respect to two separate rulemaking actions, one initiated pursuant to a petition by RMA and the other initiated pursuant to a petition by Michelin Tire Corporation (Michelin). In response to a petition by RMA (January 17, 1978) supporting a Dunlop tire which would use a higher inflation pressure and is designed to be retained on the tire rim in the event of rapid tire deflation, the National Highway Traffic Safety Administration (NHTSA) published a notice of proposed rulemaking at 43 FR 8570, March 2, 1978. That notice also proposed the addition of a Goodyear tire designed to use a higher inflation pressure. Several comments objecting to the inclusion of these tires in Table I of Appendix A of Standard No. 109 were received by NHTSA.

In response to a petition by Michelin (October 3, 1977) requesting the addition of new metric tire size designations, NHTSA published a routine amendment to Table I at 43 FR 4860, February 6, 1978. Under the procedures established by NHTSA for routine tire table amendments (33 FR 14964, October 5, 1968, as amended by 39 FR 28980, August 31, 1974), new size designations are published as a final rule which becomes effective 30 days after publication in the FEDERAL REGISTER, unless objections are received before the expiration of that 30-day period. Objections were received, so the sizes were not added. Subsequently, NHTSA published a notice of proposed rulemaking to include these sizes in Table I of Appendix A of Standard No. 109; 43 FR 13903, April 3, 1978.

NHTSA resolved the issues raised by the comments on the inclusion of the Goodyear tire and all but one of the Michelin tire sizes, and published a final rule for these tire sizes at 43 FR 24310, June 5, 1978. In that rule, NHTSA indicated that it would publish separately a final rule dealing with the Dunlop and remaining Michelin tire sizes. This notice sets forth a final rule for those sizes.

Comments objecting to the addition of these two tire size designations alleged that "intermix" or "mismatch" problems could accidentally occur when replacing a tire on a vehicle. Some of the commenters asserted that, because the nominal diameters of the proposed metric tires and corresponding metric rims (365mm and 370mm) are very nearly the same as those of certain existing English-unit tire/rim diameters (14 inch and 15 inch), it would be technically possible to mount an English-unit tire on the requested metric unit rim, or conversely, to mount a metric unit tire on

an existing English-unit rim. Some commenters alleged that serious safety problems, such as tire explosions during, or road failures shortly after tire mounting could occur as a result of such intermixing. General Motors (GM) and the Armstrong Rubber Company (Armstrong) directed such allegations to both tires in this notice and the Department of California Highway Patrols directed its objection to the Michelin request. However, none of the objections summarized above were supported by data demonstrating that the safety hazards alleged had occurred or even that they could occur.

GM requested that the NHTSA defer action on all the proposed new tire sizes for one year to allow the tire and vehicle industries to work out a general solution to potential intermix problems raised by these and other metric tires. Dunlop requested that NHTSA take no final action on the tires proposed without considering the potential safety hazards involved. The Department of California Highway Patrol recommended that the trend toward proliferation of passenger car tire sizes be halted in view of the potential safety problems discussed above. Mercedes-Benz asserted that the differences among the proposed tires were sufficient to prevent intermix, but that the anticipated introduction of additional tire-rim combinations raised the possibility of mismatch problems. Mercedes stated that the anticipated proliferation of metric tire sizes raised the prospect that the spare parts industry might not expand quickly enough to meet aftermarket needs, in view of the fact that a vehicle owner would need to replace the tires on the vehicles with the same type of tires originally mounted thereon. Mercedes suggested that NHTSA encourage the development of uniform and interchangeable tires and rims. Armstrong objected to the Michelin proposal because of alleged confusion of the public and tire service personnel arising from the slight dimensional differences in metric and English unit tire/rim combinations.

With respect to this larger issue of general standardization of tires sizes, NHTSA believes it is not necessary to resolve it before permitting these tire sizes to be introduced. As explained below, the intermix problem has been alleviated with respect to these particular tire sizes. Since this is the case, it is inappropriate to delay the introduction of these sizes while awaiting a resolution of the larger issue.

In the June 5, 1978, notice establishing a final rule for the Goodyear tire and the 390mm Michelin tires, the agency indicated that it would defer final rulemaking on the Michelin 365mm tire and the Dunlop 370mm tire until agency intermix tests were performed on these tires. NHTSA subsequently conducted its own intermix tests at this agency's Safety Research Laboratory in Riverdale, Maryland. These tests indicated that these two tire sizes would not present the alleged intermix problems. Both Dunlop and Michelin have incorporated a design feature, called "blow-by", in the bead seat area which will not allow intermixing. "Blow-by" consists of flutes molded onto the lower bead area of the tire which bleed out air in the event the tire is not mounted on the proper rim. Hence, if one of these tires were mounted on an English-unit rim, the tires would not be able to hold air. In addition, the Michelin 365mm tire and rim concept cannot be intermixed with Dunlop 370mm tire and rim concept and vice versa. Since this feature precludes any intermix problems, and no commenter raised any other issues regarding these tire sizes, NHTSA is proceeding with final rulemaking action on these proposed tire sizes.

In consideration of the foregoing, 49 CFR § 571.109 is amended. . . .

The agency has reviewed the impacts of this rule and determined that they are minimal and that this is not a significant regulation within the meaning of Executive Order 12044.

The program official and attorney principally responsible for the development of this rule are Arturo Casanova and Stephen Kratzke, respectively.

AUTHORITY: Secs. 103, 119, 201, and 202, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407, 1421, and 1422); delegation of authority at 49 CFR 1.51.

Issued on May 2, 1979.

Joan Claybrook
Administrator

44 F.R. 27394
May 10, 1979

PREAMBLE TO AMENDMENT TO APPENDIX A OF FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars

(Docket No. 79–01; Notice 2)

Action: Final rule.

Summary: Pursuant to petitions by the Rubber Manufacturers Association (RMA), European Tyre and Rim Technical Organisation (ETRTO), and Michelin Tire Corporation (Michelin), this notice amends Federal Motor Vehicle Safety Standard No. 109, *New Pneumatic Tires—Passenger Cars*, by adding certain tire size designations to Appendix A of that standard. This amendment permits the introduction into interstate commerce of the new tire sizes.

Effective date: 30 days from the date of publication in the FEDERAL REGISTER, if objections are not received before that date. June 9, 1979. ADDRESS: Comments should refer to Docket 79–01 and be submitted to Docket Section, Room 5108, 400 Seventh Street, S.W., Washington, D.C. 20590.

For further information contact:

John Diehl, Office of Automotive Ratings, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590 (202–426–1714).

Supplementary information: According to agency practice, the National Highway Traffic Safety Administration (NHTSA) respons to petitions for adding new tire sizes to Table I of Appendix A of Standard No. 109 by quarterly issuing final rules under an abbreviated rulemaking procedure for expediting such routine amendments. Guidelines for this procedure were published at 33 FR 14964, October 5, 1968, and amended at 36 FR 8298, May 4, 1971; 36 FR 13601, July 22, 1971; and 39 FR 28980, August 13, 1974. These guidelines provide that these final rules become effective 30 days after their date of publication if no comments objecting to them are received by the agency during this 30 day period. If objections are received, regular rulemaking procedures for issuing and amending motor vehicle safety standards are initiated.

On December 19, 1978, RMA petitioned for the addition of three new tires sizes to an existing table within Table I of Appendix A of Standard No. 109. RMA petitioned for the addition of seven new tire sizes to an existing table on January 23, 1979. RMA also petitioned on January 24, January 26, January 29, and February 1, 1979, for the addition of four other tire sizes to Table I. ETRTO petitioned on November 3, 1978, for the addition of a new table to Table I, and for three new tire sizes to be included in that table. ETRTO also petitioned on February 21, 1979 for the addition of five new tire sizes to existing tables in Table I. Michelin petitioned on January 19, 1979, for the addition of a new tire size to an existing table. The bases for accepting or denying requests to add new tire size designations are set forth in the introductory guidelines to Appendix A. Briefly, the tests are the appropriateness of the information submitted for inclusion in the tire tables, and the appropriateness of the requested location within the tables of the requested tire sizes. The 24 new tire size designations requested to be added to Standard No. 109 appear to meet these criteria. Accordingly, the Michelin, ETRTO, and RMA petitions are granted, and 23 new tire sizes designations are added to Table I of Appendix A of the standard pursuant to the abbreviated rulemaking procedure.

In consideration of the foregoing, 49 CFR § 571.109 is amended . . . subject to the 30-day comment period outlined above.

Interested persons are invited to submit comments on these additions. Comments must be limited so as not to exceed 15 pages in length. Necessary attachments may be appended to these submissions without regard to the 15-page limit, This limitation is intended to encourage commenters to detail their primary arguments in a succinct and concise fashion.

The agency has reviewed the impacts of this rule and determined that they are minimal and that this is not a significant regulation within the meaning of Executive Order 12044.

The program official and attorney principally responsible for the development of this rule are John Diehl and Stephen Kratzke, respectively.

AUTHORITY: Secs. 103, 119, 201, and 202, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407, 1421, and 1422); delegations of authority at 49 CFR 1.50 and 49 CFR 501.8.

Issued on May 2, 1979.

Michael M. Finkelstein
Associate Administrator
for Rulemaking

44 F.R. 27396
May 10, 1979

PREAMBLE TO APPENDIX A OF FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires for Passenger Cars

(Docket No. 79–01; Notice 3)

Action: Final rule.

Summary: Pursuant to petitions by the Rubber Manufacturers Association (RMA), and Dunlop Tire and Rubber Corporation (Dunlop), this notice amends Federal Motor Vehicle Safety Standard No. 109, *New Pneumatic Tires—Passenger Cars*, by adding certain tire size designations to Appendix A of that standard. This amendment permits the introduction into interstate commerce of the new tire sizes.

Effective Date: October 4, 1979 if objections are not received before that date.

Address: Comments should refer to Docket No. 79–01 and be submitted to Docket Section, Room 5108, 400 Seventh Street, S.W., Washington, D.C.

For Further Information Contact:

John Diehl, Office of Automotive Ratings, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590 (202–426–1714).

Supplementary Information: According to agency practice, the National Highway Traffic Safety Administration (NHTSA) responds to petitions for adding new tire sizes to Table I of Appendix A of Standard No. 109 by quarterly issuing final rules under an abbreviated rulemaking procedure for expediting such routine amendments. Guidelines for this procedure were published at 33 FR 14964, October 5, 1968, and amended at 36 FR 8298, May 4, 1971; 36 FR 13601, July 22, 1971; and 39 FR 28980, August 13, 1974. These guidelines provide that these final rules become effective 30 days after their date of publication if no comments objecting to them are received by NHTSA during this 30 day period. If objections are received, regular rulemaking procedures for issuing and amending motor vehicle safety standards are initiated.

On March 22, 1979, RMA petitioned for the addition of a new tire size to an existing table within Table I of Appendix A of Standard No. 109. RMA also petitioned on March 28, June 4, June 19, and June 28, 1979, for the addition of five other tire sizes to existing tables in Table I. Dunlop petitioned on April 6, 1979, for the addition of a new table to Table I, and for a new tire size to be included in that table. The bases for accepting or denying requests to add new tire size designations are set forth in the introductory guidelines to Appendix A. Briefly, the tests are the appropriateness of the information submitted for inclusion in the tire tables, and the appropriateness of the requested location within the tables of the requested tire sizes. The seven new tir size designations requested to be added to Standard No. 109 appear to meet these criteria. Accordingly, the Dunlop and RMA, petitions are granted, and seven new tire sizes are added to Table I of Appendix A of the standard pursuant to the abbreviated rulemaking procedure.

In consideration of the foregoing, 49 CFR § 571.109 is amended as specified below, subject to the 30-day comment period outlined above....

Interested persons are invited to submit comments on these additions. Comments must be limited so as not to exceed 15 pages in length. Necessary attachments may be appended without regard to the 15 page limit. This limitation is intended to encourage commenters to detail their primary arguments in a succinct and concise fashion.

The agency has reviewed the impacts of this rule and determined that they are minimal and that this is not a significant regulation within the meaning of Executive Order 12044.

The program official and attorney principally responsible for the development of this rule are John Diehl and Stephen Kratzke, respectively.

AUTHORITY: Secs. 103, 119, 201 and 202, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407, 1421 and 1422); delegations of authority at 49 CFR 1.50 and 49 CFR 501.8.

Issued on August 28, 1979.

A. C. Malliaris
Acting Associate Administrator
for Rulemaking

44 F.R. 51603
September 4, 1979

PREAMBLE TO AMENDMENT TO APPENDIX A OF MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires for Passenger Cars

(Docket No. 79-01; Notice 4)

ACTION: Final rule.

SUMMARY: Pursuant to petitions by the Rubber Manufacturers Association (RMA) and the European Tyre and Rim Technical Organisation (ETRTO), this notice amends Federal Motor Vehicle Safety Standard No. 109, *New Pneumatic Tires—Passenger Cars,* by adding certain tire size designations to Appendix A of that standard. This amendment permits the introduction into interstate commerce of the new tire sizes.

EFFECTIVE DATE: 30 days from date of publication in the Federal Register, if objections are not received before that date. January 16, 1980.

ADDRESSES: Comments should refer to Docket No. 79-01 and be submitted to Docket Section, Room 5108, 400 Seventh Street, S.W., Washington, D.C. 20590. (Docket hours 8 a.m. to 4 p.m.)

FOR FURTHER INFORMATION CONTACT:

John Diehl, Office of Automotive Ratings, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590 (202) 426-1714.

SUPPLEMENTARY INFORMATION: According to agency practice, the National Highway Traffic Safety Administration (NHTSA) responds to petitions for adding new tire sizes to Table I of Appendix A of Standard No. 109 by quarterly issuing final rules under an abbreviated rulemaking procedure for expediting such routine amendments. Guidelines for this procedure were published at 33 FR 14964; October 5, 1968, and amended at 36 FR 8298; May 4, 1971; 36 FR 13601; July 22, 1971; and 39 FR 28980; August 13, 1974. These guidelines provide that these final rules become effective 30 days after their date of publication if no comments objecting to them are received by NHTSA during this 30 day period. If objections are received, regular rulemaking procedures for issuing and amending motor vehicle safety standards are initiated.

On July 9, 1979, RMA petitioned for the addition of a new tire size to an existing table with Table I of Appendix A of Standard No. 109. RMA also petitioned on September 14, September 18, and September 20 for the addition of three other tire sizes to existing tables in Table I. ETRTO petitioned for the addition of two new tire sizes to existing tables on July 16, 1979. The bases for accepting or denying requests to add new tire size designations are set forth in the introductory guidelines to Appendix A. Briefly, the tests are the appropriateness of the information submitted for inclusion in the tire tables, and the appropriateness of the requested location within the tables of the requested tire sizes. The six new tire size designations requested to be added to Standard No. 109 appear to meet these criteria. Accordingly, the RMA and ETRTO petitions are granted, and six new tire sizes are added to Table I of Appendix A of the Standard pursuant to the abbreviated rulemaking procedure.

In consideration of the foregoing, 49 CFR § 571.109 is amended by the addition of new tire size designations and corresponding values to Tables I-R, I-S, I-KK, I-LL, and I-WW.

Interested persons are invited to submit comments on these additions. Comments must be limited so as not to exceed 15 pages in length. Necessary attachments may be appended without regard to the 15 page limit. This limitation is intended to encourage commenters to detail their primary comments in a concise fashion. Those persons desiring to be notified upon receipt of their comments in the rules docket should enclose a self-

addressed, stamped postcard in the envelope with their comments. Upon receiving the comments, the docket supervisor will return the postcard by mail.

The agency has reviewed the impacts of this rule, and determined that permitting the introduction of these tire sizes will benefit those manufacturers desiring to produce the sizes and will have no effect on those manufacturers who do not. The public will be minimally affected by this rule. Accordingly, NHTSA has determined that this is not a significant regulation within the meaning of Executive Order 12044.

The program official and attorney principally responsible for the development of this rule are John Diehl and Stephen Kratzke, respectively.

Issued on December 7, 1979.

Michael M. Finkelstein
Associate Administrator
for Rulemaking

44 F.R. 73102
December 17, 1979

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 109A

Federal Motor Vehicle Safety Standards;
New Pneumatic Tires for Passenger Cars

(Docket No. 80-14; Notice 3)

ACTION: Final rule.

SUMMARY: This rule deletes Table I from Appendix A of Federal Motor Vehicle Safety Standard 109. That table required that, before introducing and selling a new tire size, a manufacturer had to submit load and dimensional information to this agency and await the inclusion of the tire size in Table I. The agency has determined that this procedure was an unnecessary burden on the tire manufacturers for several reasons. First, submission to the agency of the load and dimensional data, which is needed for conducting compliance tests, was unnecessary since the data could be obtained simply from a tire standardization organization. Second, the agency did not attempt to validate independently the submitted data. Instead, NHTSA simply checked the submitted data against that published for the tire size in one of the standardization organization yearbooks. Under the new procedure published today, a manufacturer may introduce new tire sizes as soon as the load and dimensional information for the new size has been either submitted to this agency and to that manufacturer's dealers or published as a part of one of the standardization organization's yearbooks.

EFFECTIVE DATE: This amendment becomes effective 180 days after publication in the *Federal Register.*

ADDRESS: Petitions for reconsideration may be submitted within 30 days of the publication of this notice in the *Federal Register* to: Administrator, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590.

SUPPLEMENTARY INFORMATION: Standard No. 109, *New Pneumatic Tires—Passenger Cars,* 49 CFR § 571.109, specifies the requirements for all tires manufactured for use on passenger cars manufactured after 1948. This standard, which was issued under the National Traffic and Motor Vehicle Safety Act (Safety Act), requires that the tires meet specified strength, resistance to bead unseating, endurance, and high speed requirements, and be labeled with certain safety information. Closely related to this standard is Standard 110, *Tire Selection and Rims—Passenger Cars,* 49 CFR § 571.110, which requires that each passenger car be equipped with tires that comply with Standard 109, that tires on all cars be capable of carrying the load of that vehicle, that the rims on the car be appropriate for use with the tires, and that certain data about the car and tires appear on a placard in the passenger car.

For purposes of testing tires and vehicles to determine their compliance with these standards, several variable factors such as the tire's inflation pressure, the load on the tire, and the rim on which the tire is mounted, must be specified. Under the procedures

previously followed, when a tire manufacturer intended to introduce a new tire size, it had to submit these variable factors to the agency for inclusion via a rulemaking proceeding in Table I of Appendix A of Standard 109. Until these factors were published in Table I, the new tire size could not be imported into or sold in this country.

Michelin Tire Corporation (Michelin) filed a petition with the National Highway Traffic Safety Administration (NHTSA) requesting that the agency eliminate Table I from Standard 109. Michelin argued that Standard 119, which applies to all motor vehicle tires other than those for passenger cars, has been successfully implemented without any tire tables, and that the provision of Standard 109 requiring tire sizes to appear in Table I needlessly delays the introduction of innovative tire technology.

During its consideration of this petition, NHTSA reexamined its role and that of the various tire standardization organizations in connection with the approval of new tire sizes. These standardization organizations are voluntary associations composed of representatives of each of the member tire companies. The purpose of these standardization organizations is to establish and promulgate engineering standards for tires, rims, and their allied parts. Generally, when a tire manufacturer wanted to introduce a new tire size, it first presented the load and dimensional data on the new size to a standardization organization. The standardization organization checked the data against that derived from its established formulae for computing these data, and if they were accurate, published the data as part of its yearbook. Concurrently, the tire manufacturers associations or individual tire company submitted a petition with the appropriate data to NHTSA, requesting the inclusion of the new size in Table I. This agency then duplicated the work of the standardization organizations, checking to see that the load carrying data were calculated according to the proper formula. If they were, the agency included the tire size in the next routine amendment to Table I. No independent testing of the load carrying capabilities of new tire sizes was ever undertaken by the agency before adding those tires to the table.

NHTSA also considered the effect that deleting Table I would have on the substantive requirements of Standard 109 and on the introduction of new tires. There would be no change in the substantive requirements. Any tire to be sold in the United States would still be required to pass all the performance requirements set forth in the standard. However, there would be a change in the ease with which new tires could be introduced. There would no longer be any situations where a tire which fully complied with all of the requirements of Standard 109 would have its introduction delayed because of the necessity of first listing that size in the standard. With the elimination of the tire table, manufacturers would be able to sell tires in the United States as soon as the manufacturer certified that those tires comply with all of the substantive requirements of Standard 109. Thus, Michelin's petition presented the agency with an opportunity to facilitate the introduction of new technology without relaxing any safety requirements.

The petition also presented the agency with an opportunity to explore the possibility of relying on private standards groups as an alternative to mandatory regulation by a Federal agency. This situation seemed like a particularly excellent opportunity to pursue that alternative since NHTSA was already relying on those organizations' determinations of the validity of their calculations.

Accordingly, because deletion of Table I would enable the agency to remove a requirement that imposed time-consuming administrative burdens and delayed the introduction of new tire technology without providing commensurate safety benefits, the agency decided to issue a proposal deleting that table. The notice of proposed rulemaking (NPRM) was published at 45 F.R. 57466 on August 28, 1980.

The agency received 11 comments on the NPRM. Comments supporting the proposal to eliminate Table I were submitted by

Chrysler, Ford, Michelin, Volkswagen of America, and JATMA (the Japanese standardization organization). Comments opposing the proposal were submitted by General Motors, the Rubber Manufacturers Association (RMA, the trade association representing U.S. tire manufacturers), and the Tire & Rim Association (T&RA, the American standardization organization).

Several commenters stated that, without the tire tables, the intermix controversy could have produced serious safety hazards for persons mounting tires. This controversy involved the only safety issue which has ever arisen in the 14 year history of Table I in connection with a petition to add new tire sizes to that Table. This issue was the possible "intermix" of English unit tires and rims with the more recently introduced metric unit tires designed for use on metric unit rims. Since the sizes of these tires and rims may be a close, but not exact match, it would be possible to mismatch an English unit tire on a metric rim or vice versa. That mismatching could cause the bead of the tire to explode during inflation, or the tire to suddenly lose air while in use.

There were several other comments related to the mismatch controversy. One commenter, a member of the Illinois Vehicle Equipment Safety Commission, stated that before the tire tables could safety be deleted, some amendment would have to be made to Standard 109 to make it impossible to mount tires on rims not compatible with those tires. Similarly, other commenters stated that the agency assumed in the NPRM that the standardization organizations would undertake new duties which historically they have not undertaken, and which they may be unwilling to undertake.

The agency is not aware of explosions due to mismatch ever actually happening. However, the possibility of such explosions was raised as a possibility when NHTSA proposed to add new metric tire sizes to Table I in 1978 and again in 1980 and 1981. Some provision to eliminate the possibility of such intermix would eliminate any potential safety problems which might arise from "mismatches."

Half of this potential problem has already been removed by the routine incorporation of a "blow-by" feature in the new millimetric tires designed for use on millimetric rims. The "blow-by" feature consists of flutes or grooves in the bead area of the tire which prevent the tire from forming a seal with the rim and holding air when the tire is improperly mounted on an English-unit rim. The agency believes that the manufacturers are very unlikely to stop incorporating this feature on these tires because its use is so simple and inexpensive. Also discontinuance would expose the tire manufacturer to a product liability suit if the tire failed as a result of being intermixed. Accordingly, the agency believes it is reasonable to assume that the problem of intermix of English-unit rims with the millimetric tires will not be a problem in the future.

The agency recognizes that there is apparently no similarly simple design change currently used to prevent an intermix of an English-unit tire with the millimetric rims designed for use with millimetric tires. The agency is considering several options to deal with this situation. One option is the adoption of minimum and maximum well depths for these rims. These requirements prevent an English-unit tire from "buttonholing" on the millimetric rim. "Buttonholing" refers to the process of stretching the beads of a tire over the flange of the rim and derives its name from its similarity to the process of manipulating a bottonhole so that it fits over a button. T&RA already has a practice of adopting well depth requirements for these rims. Also, the European Tyre Rim and Technological Organization (ERTRTO) has recently established well depth requirements for some millimetric rims. If these requirements were adopted by all of the standardization organizations, they would effectively eliminate the possibility of any intermixing English-unit tires with these rims.

Another option would be for NHTSA to propose requiring that the rim size be labeled on passenger car rims. Such a requirement would parallel the existing requirement in Standard 120 that the rim size be labeled on

rims other than passenger car rims. Compliance with that requirement has apparently been accomplished in a fairly simple and inexpensive manner. If the rim size were labeled on car rims, any person mounting a tire could compare the rim size with the tire size required to be labeled on the tire and thereby ensure that the tire and rim sizes were compatible.

Both of these options would effectively minimize the chances of a dangerous intermix actually occurring. In view of the substantial role already played by the standardization organizations in establishing tire load and dimensional specifications, the agency believes that it is appropriate to allow those organizations to solve the potential problem by adopting minimum and maximum well depth requirements for millimetric rims. If these organizations do not undertake to establish these requirements as routine matter, the agency will examine further the desirability of proposing to require that the rim size be labeled on passenger car rims.

Some commenters stated that deletion of Table I would remove the only single source for determining proper loads and dimensions for all tires used in the United States. The loss of that single source was asserted to be significant, because the foreign standardizing bodies do not list all the information shown in the table. It was suggested that persons desiring to obtain that information would encounter greater difficulty in locating it.

NHTSA agrees that there will not be any single source for this information when Table I is abolished. However, NHTSA does not believe and the commenters do not allege that the loss of that single source would create any significant problems for current users of this table. The three possible users are: (1) a car manufacturer deciding on the most appropriate tires for use on a new or redesigned model; (2) a tire dealer replacing tires on a consumer's car; or (3) this agency when it is testing the tires for compliance with Standard 109. The sources of expertise and information available to car manufacturers and their experience in regularly purchasing large quantities of tires for their new cars make it possible for those manufacturers to maintain full knowledge of all possible tire sizes which could be used on their cars without having to resort to consulting Table I. The tire dealer has limited need for information about the wide variety of tires in Table I since most tire replacements are believed to involve simply using the same tire size already on the car. With respect to those instances in which a different tire size is used, the agency believes that it is most likely that the tire dealer simply consults the booklets published by the individual tire manufacturers or one of the yearbooks published by the standardization organizations to determine an appropriate tire size. It seems improbable that a tire dealer consults a copy of Title 49, *Code of Federal Regulations* before installing replacement tires on a consumer's car. In the case of this agency, NHTSA can obtain information from the appropriate yearbooks or from the individual tire manufacturers before testing the tires. The data from these sources, together with the information labeled on the sidewall of the tire, will provide all the information that this agency needs to test the tires. Thus, it does not appear that any of the parties which might potentially derive some benefit from the convenience of a single source of specifications for all tire sizes will have any difficulty obtaining the information they need without this single source.

The agency's belief that a single source is not indispensable is borne out by the experience with truck tires under Standard 119. Unlike Standard 109, Standard 119 does not contain a single listing of all tire sizes. Yet, in the eight years since Standard 119 became effective, there have not been any reported safety problems or difficulties that were attributed to any limitation on the availability of specifications for the various sizes. Truck manufacturers have not had any reported problems in deciding on appropriate tires nor have tire dealers had problems selecting appropriate replacement sizes. Further, there have not been any problems for the agency in determining the appropriate tire specifications for compliance testing purposes.

While not indicating why it believed that

the absence of Table I might create problems for car manufacturers and tire dealers, one commenter argued that the experience with Standard 119 is not relevant as a guide for what would result under Standard 109 without tire tables because of the differences in marketing car and truck tires. The agency agrees that buyers of truck tires are generally more knowledgeable about their purchase. It agrees also that there is not as great a variety of truck tire sizes as there is for car tire sizes. However, the significance of these differences is substantially diminished by the reliance of car tire purchasers on the knowledge of tire dealers about the specifications of the new car tires. Since tire dealers typically sell tires made by only a few tire manufacturers, the dealers need to know the capabilities of only those manufacturers' tires. They gain this knowledge from the information booklets distributed by the individual manufacturers and from the standardization organization yearbooks. Since deletion of Table I will have no affect on the continued availability of these sources, dealers will still be able to rely on them in the future.

A commenter argued that deletion of the tire table would allow a single manufacturer to introduce tires and rims incompatible with existing ones, giving rise to safety problems. Absent Table I, this commenter argued that there would be no opportunity for advance notice and scrutiny of these potential conflicts. NHTSA does not agree with this comment. The degree of care induced by the possibility of product liability suits and unfavorable publicity make it unlikely that a manufacturer would knowingly introduce tire and rim sizes which might actually cause safety problems. It is possible that, in spite of reasonable care on the part of the manufacturer, tire or rim sizing could inadvertently give rise to some other safety problems, such as those that theoretically might have occurred as a result of the potential for intermix. Since the only potential problem identified to date is intermix and that problem is likely to be foreclosed as suggested above, it is difficult to foresee what that other safety problem might be. However, if a specific new type of safety problem actually does arise, NHTSA can use its authority under the Safety Act to take appropriate action in response to that concrete situation.

Some commenters stated that the deletion of Table I would lead to proliferation of tire sizes. Commenters stated also that because the formula used by the foreign tire manufacturers to calculate the load-carrying capability of their tires differs from that used by the U.S. manufacturers, the deletion of Table I could result in a proliferation of load schedules for the same size tires. These commenters argued that this proliferation would make it possible for a consumer to buy a replacement tire with the proper size, but insufficient load-carrying capacity for his or her car.

The agency does not believe that deletion of Table I would lead to a proliferation of either tire sizes or load schedules or create a safety problem. The mere existence of the table does not exclude the possibility of multiple load schedules. In the case of several tire sizes, there are already varying load schedules listed for each of those tire sizes. (See, for instance, the values shown for the 225/70 R15 size in Tables I-T and I-JJ. The domestic version of this tire size is preceded by the letter "P," but the dimensions of the tires are identical.)

Like the problem of intermix, the proliferation of tire sizes and load schedules has occurred notwithstanding the existence of Table I. This is because Table I was never intended to serve as a barrier to any manufacturer either introducing any new tire size it wanted, provided that appropriate data for that tire size were listed in the table, or determining the load schedule appropriate for its tires. Table I was designed to be nothing more than it is, i.e., a simple listing of tire sizes. It is not a mechanism for regulating or controlling the number or variety of those sizes or load schedules. The appropriate mechanisms for considering any safety problems regarding tires are proceedings to determine whether new performance requirements should be established or whether a finding of safety-related defect

should be made.

These variations in sizes and load schedules have occurred since the load schedules in Table I are freely drawn from the yearbooks of the standardization organizations and since these organizations permit different load schedules to be established for the same tire size. Since the table has had no influence on the incidence of load schedule proliferation, it is not reasonable to suppose that deletion of the table will have any influence on the extent of proliferation either.

NHTSA does not believe that the existence of different load schedules for the same tire size will create any safety problems. The agency has not received reports of any safety problems or of any incidents in which consumers have had tires with insufficient load-carrying capacity installed on their cars. There are several other factors which underlie the agency's belief. An amendment adopted by this rule requires that the load rating for a tire be equal to or greater than a load rating published for that tire size in the yearbook of one of the standardization organizations. This phraseology differs slightly from that proposed in the NPRM. This nonsubstantive change was made in response to a request by JATMA that the provision be worded so that it would exactly parallel the language of Standard 119. This allows a manufacturer or standardization organization to specify that its tire can carry a greater load than has been published for that size, and be subjected to a more strenuous test by this agency.

More important, the agency believes that deletion of Table I will not reduce the incentive tire dealers have to make certain that the maximum load capability of the tires they sell to consumers is not less than that of the consumers' old tires. Notwithstanding the deletion of the table, the dealers will continue to exercise great care in order to avoid tort liability for selling tires with insufficient maximum load capability. The maximum load of each tire is required to be labeled on the tire by Standard 109. Thus, it does not matter what load schedules are published for that size. To ensure that the replacement tire is appropriate for the vehicle, the dealer can compare the load-carrying capability with the weight of the vehicle on each axle. That information is required to be labeled on the vehicle by Part 567.

The agency disagrees with the suggestion by some commenters that, absent the process of adding new tire sizes to Table I, there would not be any forum for addressing any international concerns about safety problems that might arise regarding new tire sizes. Under section 124 of the Safety Act, domestic and foreign parties could petition the agency to commence rulemaking or defect proceedings to address such problems. Rulemaking and defect proceedings are initiated in response to a petition when the agency finds that the petitioner sufficiently demonstrates the likely existence of a significant safety problem. If proceedings were commenced regarding any tire safety problems, those parties would also have the opportunity to participate in those proceedings.

Further, the membership of the standardization organizations is international. Since all of the tire companies are members of at least one of the tire standardization organizations, they are fully informed about the tire sizes that the standardization organizations are considering be added to their yearbooks. For instance, Firestone, Goodyear, Uniroyal, Goodrich, and Mohawk are all members of the ETRTO and the STRO (the Scandinavian standardization organization), as well as the T&RA. Thus, there is ample opportunity for these companies to present their views on tire and rim sizing to these organizations, and have these groups address the merits of those views. In the same way, the foreign tire manufacturers are affiliated members of T&RA. They can present any objections they might have regarding tire and rim sizing to that organization. NHTSA believes that these organizations will give any objections a full consideration. If a tire manufacturer is dissatisfied with the response to its objections, it can submit an appropriate petition to NHTSA.

Chrysler, Ford, and General Motors all

urged that if the standard were to be revised by deleting Table I, the procedures for conducting the high speed performance test should be revised so that they do not require testing a tire at only 85 percent of its maximum load as proposed in the NPRM. These commenters explained that the 85 percent figure would require them to use larger tires on some of their models even though there isn't any evidence that the tire sizes currently being used by the vehicle manufacturers are causing any safety problems.

In proposing use of the 85 percent figure, NHTSA was unaware of this possibility. It did not intend that deleting Table I would have the indirect effect of necessitating the use of larger tires by the vehicle manufacturers.

The car manufacturers suggested two possible revisions in the high speed test requirement that would avoid having to increase the size of any tires. General Motors suggested that NHTSA use the same reference to the intermediate load formerly shown in Standard 109, but that instead of referring to the intermediate load column in Table I, refer to the intermediate load column in the yearbooks of the various standardization organizations. NHTSA notes that there would be a problem with this suggestion. Only the American standardization organization publishes the intermediate loads which would be needed for the high speed test. Thus, if the agency adopted this approach, all foreign standardization organizations would be forced to publish intermediate loads. This step is unnecessary since the agency has accepted an alternative suggestion by other commenters.

Chrysler and Ford both suggested that the load on the tires during the high speed test be increased from the proposed 85 percent of the load at the maximum permissible inflation pressure to 88 percent of that load. This change, according to both companies, would eliminate any need for using larger tires. The agency agrees. Accordingly, this suggestion is adopted in this final rule.

Two commenters urged that the dimensional requirements be deleted from Standard 109. JATMA argued that these requirements are unnecessary because manufacturers will, as part of their quality control program, produce tires whose dimensions conform with those on the tires' labels. JATMA stated that there have not been any safety problems with improperly sized truck tires even though Standard 119 has no dimensional requirements. It stated also that there have not been any problems with improperly sized rims even though neither Standard 110 nor Standard 120 have any dimensional requirements. NHTSA believes that these arguments are accurate, but is unable to adopt the commenters' suggestions in this final rule. A substantive change to a standard cannot be adopted without giving the public an opportunity to comment on the proposed change. Since the NPRM did not indicate that the agency was considering such a step, it cannot be adopted in this final rule. The agency will consider initiating rulemaking to eliminate these requirements from Standard 109 in the future based on the reasons given by JATMA.

Michelin also argued that the dimensional requirements should be deleted because the language in the NPRM referring to these requirements would have effectively prohibited an individual manufacturer from introducing new tire sizes without the approval of some standardization organization. Standard 109 currently allows tire manufacturers desiring to introduce a new tire size either to use the data listed in one of the standardization organization yearbooks for the tire size or to develop their own data for the tire and submit it to NHTSA without first coordinating with any standardization organization. Regardless of their source, these data were submitted to NHTSA for inclusion in Table I. When the tire size and its data were included, the tires of that size were tested in accordance with the included data.

The NPRM proposed two changes in the current procedure. First, the agency proposed to eliminate Table I so that data for new tire sizes would not have to be included in that table prior to the importation or sale of new tires of those sizes. Second, the agency proposed that all new tire sizes would have to

be accepted by some standardization organization prior to importation or sale.

Michelin objected to the second proposal. The agency agrees that its goal of facilitating the introduction of new tire technology would be best served if the standardization organizations were not indirectly given ultimate authority over the tire manufacturers in the area of tire sizing. Accordingly, the agency has not adopted that second proposal. Instead, the agency has specified in the amendments made by this notice that, as under the current standard, tire manufacturers may either use the dimensional data published by one of the standardization organizations or furnish the data directly to NHTSA, each of its dealers, and, if requested, to members of the public.

As another reason for retaining Table I, several commenters observed that the NPRM would have required the size factor of tires to be at least as large as that published by one of the standardization organizations even though the foreign standardization organizations do not publish the size factor dimension. This observation is correct, but in a technical sense only. While the yearbooks do not contain the size factor, they do contain equivalent information. Every yearbook specifies a tire's overall diameter and section width. Added together, these dimensions equal the size factor.

The deletion of Table I from Standard 109 becomes effective 180 days after this notice is published in the *Federal Register*. The 180-day period will give the tire manufacturers and the various standardization organizations an opportunity to examine the yearbooks to ensure that all of the sizes currently listed in Table I of Standard 109 are shown in one of the yearbooks.

JATMA requested that the agency state in this preamble that tire sizes which are currently listed in Table I may be produced after the table is deleted. That organization did not explain what problem, if any, prompted this comment. Most tire sizes in Table I are already in at least one of the yearbooks of the standardization organizations. It is only the very old or very new tire sizes that might not be in one of the yearbooks. Addition of the data for those sizes to a yearbook should be a fairly simple process since the data for those sizes already exist in Table I. The leadtime of 180 days provided by this notice should provide ample time for the manufacturers and standardization organizations to add that data. JATMA and the other standardization organizations should check the tire sizes to be listed in their 1982 yearbooks to be sure that all of the sizes that their members plan to sell in the United States are among those listed sizes.

NHTSA has analyzed the impacts of this action and determined that this action is not "major" within the meaning of Executive Order 12291 or "significant" within the meaning of the Department of Transportation regulatory policies and procedures. The principal impacts of adopting this rule will be to reduce unnecessary paperwork burdens for the manufacturers and to facilitate the introduction of new technology in tires. As a result, there will be some cost savings for the manufacturers. Also, both innovative tire manufacturers and consumers will benefit from the earlier introduction of new tire technology. A regulatory evaluation regarding these impacts has been prepared and placed in the docket for this action. Copies of the evaluation may be obtained by writing the Docket Section or calling it at (202) 426-2768.

The agency has considered the environmental implications of this rule in accordance with the Environmental Policy Act of 1969 and determined that this rule will not significantly affect the human environment.

The *Regulatory Flexibility Act* is not applicable to this rule since that Act applies only to rulemaking proceedings in which the NPRM was issued on or after January 1, 1981. The NPRM in this rulemaking action was issued in August 1980. If that Act were applicable, NHTSA would have determined that this rule will not "have a significant economic impact on a substantial number of small entities" and that a Regulatory Flexibility Analysis was therefore not required. The reduced costs resulting from this rule do not have a significant effect on the tire manufacturers. Further, the agency

believes that few of the tire manufacturers would qualify as small businesses. Any tire manufacturers that do qualify as small businesses will enjoy the same reduction of paperwork and opportunity to avoid delays in the introduction of new tire sizes as the larger manufacturers. Small governmental units and small organizations are generally affected by amendments to the Federal Motor Vehicle Safety Standards as purchasers of new motor vehicle and new motor vehicle equipment. Since this rule will not significantly affect the price of tires, small governmental units and small organizations will not be affected.

Issued on December 8, 1981.

Diane K. Steed
Acting Administrator
46 F.R. 61473
December 17, 1981

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires
(Docket No. 82-10; Notice 1)

ACTION: Final rule.

SUMMARY: Pursuant to petitions filed by Michelin Tire Corporation (Michelin) and the European Tyre and Rim Technical Organization (ETRTO), this notice amends Federal Motor Vehicle Safety Standard No. 109, *New Pneumatic Tires—Passenger Cars*, by adding certain tire size designations to Table I of Appendix A of that standard. This amendment permits the introduction into interstate commerce of the new tire sizes.

EFFECTIVE DATE: June 2, 1982, if no objections are received from commenters before that date.

SUPPLEMENTARY INFORMATION: According to agency practice, NHTSA responds to petitions for adding new tire sizes to Table I of Appendix A of Standard No. 109 by quarterly issuing final rules under an abbreviated rulemaking procedure for expediting such routine amendments. Guidelines for this procedure were published at 33 F.R. 14964, October 5, 1968, and were amended at 36 F.R. 8298, May 4, 1971; 36 F.R. 13601, July 22, 1971; and 39 F.R. 28980, August 13, 1974. Those guidelines provide that these final rules become effective June 2, 1982 if no comments are received objecting to the final rules during this 30-day period. If objections are received, regular rulemaking procedures for issuing and amending motor vehicle safety standards are initiated.

Michelin petitioned to add two tire sizes to existing tables. Additionally, Michelin petitioned for the addition of a new tire table, and requested that six new tire sizes be included in that new table, ETRTO requested the addition of one new tire size to an existing table, and requested that a new table be established for a new tire size.

The bases for accepting or denying requests to add new tire size designations to the tire tables are set forth in the introductory guidelines to Appendix A. Briefly, the tests are the appropriateness of the information submitted for inclusion in the tire tables and the appropriateness of the location within the tables of the requested tire size. The ten new sizes included in this notice meet these criteria. Accordingly, the Michelin and ETRTO petitions are granted, and ten new tire sizes are added to Table I of Appendix A of the standard pursuant to the abbreviated rulemaking procedures.

NHTSA expects that this may be the last time it uses these abbreviated rulemaking procedures, because it has published a final rule deleting Table I from Appendix A of Standard 109 (46 F.R. 61473, December 17, 1981). That rule becomes effective June 15, 1982, at which time Table I will be deleted and no further petitions for additions will be necessary. The agency is presently considering several petitions for a reconsideration of that rule.

In consideration of the foregoing, 49 CFR 571.109 is amended as specified below, subject to the 30-day comment period outlined above:

1. Table I of Appendix A is amended by adding the following sizes and corresponding values to Table I-H, I-QQ, I-RR, and I-AAB:

Table I.—H Tire Load Ratings, Test Rims, Minimum Size Factors, and Section Widths for "R" Type Radial Ply Tires

Tire size[1] designation	Maximum tire loads (pounds) at various cold inflation pressures (psi)													Test rim width (inches)	Minimum size factor (inches)	Section width[2] (inches)
	16	18	20	22	24	26	28	30	32	34	36	38	40			
175R16	920	980	1,040	1,100	1,160	1,210	1,260	1,310	1,360	1,400	1,450	1,490	1,540	5	33 49	7 00

[1] The letters "H," "S," or "V" may be included in any specified tire size designation adjacent to the "R."
[2] Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

Table I.—QQ Tire Load Ratings, Test Rims, Minimum Size Factors, and Section Widths for "55" Series All Millimetric Radial Ply Tires for (TR or JM Rims)

Tire size[1] designation	Maximum tire loads (pounds) at various cold inflation pressures (psi)													Test rim width (mm)	Minimum size factor (mm)	Section width[2] (mm)
	16	18	20	22	24	26	28	30	32	34	36	38	40			
200/55R390	790	845	895	940	990	1,030	1,075	1,115	1,155	1,195	1,235	1,270	1,310	150	801	204

[1]The letters "H," "S," or "V" may be included in any specified tire size designation adjacent to the "R."
[2]Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

Table I.—RR Tire Load Ratings, Test Rims, Minimum Size Factors, and Section Widths for 'P/65' Series ISO Type Tires

Tire size[1] designation[3]	Maximum tire loads (kilograms) at various cold inflation pressures (kPa)[4]									Test rim width (inches)	Minimum size factor (mm)	Section[2] width (mm)
	120	140	160	180	200	220	240	260	280			
P185/65R365	365	395	425	450	470	495	520			135	779	187

[1]The letters "D" for diagonal and "B" for bias belted may be used in place of the "R."
[2]Actual section width and overall width shall not exceed the specified width by more than the amount specified in S4.2.2.2.
[3]The letters "H," "S," or "V" may be included in any specified tire size designation adjacent to the "R."
[4]The designated cold inflation pressures may be increased to a maximum of 300kPa to meet special vehicle requirements.

Table I.—AAB Tire Load Rating, Test Rims, Minimum Size Factors, and Section Widths for T'90' Series 60 Lb/In^2 Tires

Tire size[1] designation[3]	Maximum tire loads (Pounds at 60 psi cold inflation pressure)	Test rim width (inches)	Minimum size factor (inches)	Section width[2] (inches)
T115/90R13	1,225	3½	25.43	4.65

[1]The letters "D" for diagonal and "B" for bias belted may be used in place of the "R."
[2]Actual section width and overall width shall not exceed the specified width by more than the amount specified in S4.2.2.2.

2. Table I of Appendix A is amended by adding two new tables, Tables I-AAC and I-AAD, with the following tire sizes included therein:

Table I.—AAC Tire Load Rating, Test Rims, Minimum Size Factors, and Section Widths for T'110' Series 60 LB/In^2 Tires

Tire size[1] designation[3]	Maximum tire loads (pounds at 60 psi cold inflation pressure)	Test rim width (inches)	Minimum size factor (inches)	Section[2] width (inches)
T95/110R13	925	3	24.76	3.90
T95/110R14	990	3	25.79	3.90
T95/110R15	1,035	3	26.77	3.90
T115/110R13	1,280	3½	27.17	4.65
T115/110R14	1,355	3½	28.19	4.65
T115/110R15	1,430	3½	29.17	4.65

[1]The letters "D" for diagonal and "B" for bias belted may be used in place of the "R."
[2]Actual section width and overall width shall not exceed the specified width by more than the amount specified in S4.2.2.2.

Table I.—AAD Tire Load Ratings, Test Rims, Minimum Size Factors, and Section Widths for Series "R" Type Radial

Tire size[1] designation	Maximum tire loads (pounds) at various cold inflation pressures (psi)													Test rim width (inches)	Minimum size factor (inches)	Section width[2] (inches)
	16	18	20	22	24	26	28	30	32	34	36	38	40			
215/80R16	1,290	1,380	1,460	1,540	1,620	1,690	1,770	1,830	1,900	1,970	2,030	2,090	2,150	6	37.38	8.50

[1]The letters "H," "S," or "V" may be included in any specified tire size designation adjacent to the "R."
[2]Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

Interested persons are invited to submit comments on these additions. Comments must be limited so as not to exceed 15 pages in length. Necessary attachments may be appended without regard to the 15-page limit. This limitation is intended to encourage commenters to detail their primary arguments in a concise fashion. Those persons desiring to be notified upon receipt of their comments in the rules docket should enclose a self-addressed, stamped postcard in the envelope with their comments. When the comments are received, the docket supervisor will return the postcard by mail.

The agency has reviewed the impacts of this rule and determined that they are limited to permitting the introduction of the newly listed tire sizes by those manufacturers wishing to do so. The rule does not impose any regulatory burden on any manufacturer. The rule increases the availability of new tire sizes to the public. Accordingly, NHTSA has determined that this rule is neither major within the meaning of Executive Order 12291 nor significant within the meaning of the Department of Transportation regulatory policies and procedures. Further, the agency reviewed this amendment under the National Environmental Policy Act and determined that the rule will have no significant effects on the human environment.

The program official and attorney principally responsible for the development of this rule are John A. Diehl and Stephen Kratzke, respectively.

Issued on April 23, 1982.

Courtney M. Price
Associate Administrator
for Rulemaking

47 F.R. 18904
May 3, 1982

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 109

New Pneumatic Tires—Passenger Cars
(Docket No. 80-14; Notice 5)

ACTION: Response to petitions for reconsideration; final rule.

SUMMARY: This agency received five petitions for reconsideration of its final rule deleting Table I from Federal Motor Vehicle Safety Standard No. 109. Subsequently, one of the petitioners filed another petition "renewing" its petition for reconsideration. In response to these petitions, the agency is making the following editorial changes to the final rule previously published:

(1) The maximum load for a tire size need not be published in a standardization organization publication, but can be submitted by an individual manufacturer to this agency and to the manufacturer's tire dealers along with the other required technical information related to that new tire size.

(2) The maximum load labeled on the tire sidewall will be used to determine test conditions for the tire in the bead unseating test for temporary spare tires and determining the maximum permissible vehicle load on the tires for purposes of Standard No. 110. The final rule specified that the maximum loads published in a standardization organization yearbook or submitted to this agency by an individual manufacturer would be used as a reference.

(3) The name of the Japanese standardization organization is corrected.

This notice defers action on the requests to change the loading for the high speed test. Recent amendments to the Uniform Tire Quality Grading Standards (UTQGS) have resulted in different tests being specified for the temperature resistance test in UTQGS and the high speed test in Standard No. 109. NHTSA has requested comments on possible means of specifying the same test procedures for these tests. No final comments have been analyzed.

This notice also denies several requests for amendments. Specifically, it denies requests (1) to maintain a requirement for a minimum size factor, because the agency does not believe that any tire manufacturer will undersize its tires; (2) to alter the testing references for the endurance test, because no data or analyses were presented to suggest that these changes from the old endurance test procedures would pose any testing difficulties or significant changes from the procedures followed with Table I; and (3) to continue advance public notice of the introduction of new tire sizes or tire/rim concepts, because no safety purpose would be served by such advance notice.

EFFECTIVE DATE: The slight editorial changes made herein become effective August 19, 1982.

SUPPLEMENTARY INFORMATION: NHTSA has published a final rule deleting Table I from Federal Motor Vehicle Safety Standard No. 109 (49 CFR 571.109) at 46 F.R. 61473; December 17, 1981. Table I was a listing of dimensional and loading information for all passenger car tire sizes. This information has been used by this agency for testing tires for compliance with Standard No. 109 and for determining the appropriateness of the tires for use on particular vehicles in accordance with Standard No. 110. In so acting, NHTSA determined that Table I was not necessary to obtain these testing specifications, since they could be determined from the information labeled on the sidewall on the tires. No other safety-related justifications for retaining the listing were found to exist. Additionally, the agency's experience with

administering this listing suggested that the process caused delays in the introduction of new tires and tire concepts and allowed competitors a chance to develop their own version of the new tires. Based on these considerations, NHTSA dropped the Table I from Standard No. 109, effective June 15, 1982.[1]

Five petitions for reconsideration of that final rule were submitted to the agency. The agency has carefully considered those petitions and granted them to the extent set forth below.

Source of load rating for a tire size. One petitioner, Michelin, generally supported the final rule, but objected to the requirement in section S4.2.1 of Standard No. 109 that the load rating for a tire size be listed in a publication of a standardization organization.[2] According to Michelin, the requirement would allow the standardization organizations to block the listing of a new tire size for reasons unrelated to safety, thereby preventing the introduction of the tire.

NHTSA has no information indicating that any standardization organization would behave in this fashion, and Michelin did not mention any standardization organization with which it had such an experience. In addition, however, in the final rule the agency had inadvertently omitted an alternative to this requirement. The dimensional specifications, test rim widths, and inflation pressure information for a new tire size are permitted by the December final rule either to be published in a standardization organization yearbook or to be submitted directly to the agency by an individual manufacturer. NHTSA intended to treat the maximum load information in the same manner as this other information, and the rule is amended now to do so. This change requires a conforming amendment to Section S4.3.1(c) of Standard No. 110, which also specified that the loading information be published by a standardization organization publication.

The agency also received a petition for reconsideration from Japan Automobile Tire Manufactures' Association, Inc. (JATMA), the Japanese standardization organization. This organization generally supported the final rule, but requested three editorial changes.

Japanese tire standardization organizations. First, JATMA asked that their organization be listed as the Japanese standardization organization. The standardization organization currently listed, Japanese Industrial Standards, is an organization for all Japanese industry, not just tires, and does not publish yearbooks showing tire load ratings and inflation pressures. Accordingly, this rule is amended to list JATMA as the Japanese standardization organization.

Source of maximum load rating used to determine test conditions. Second, JATMA asked that Section S4.2.2.3(c) of Standard No. 109 (the bead unseating test for temporary spare tire sizes) and Section S4.2.1. of Standard No. 110 (the vehicle maximum load on the tires) be revised to specify that the maximum load ratings marked on the tire's sidewall be the reference used by the agency to determine the testing conditions. The final rule specified the use of the maximum load published in a standardization organization publication or submitted by an individual manufacturer. That rule already uses the maximum load marked on the sidewall to determine the test conditions for the high speed and endurance tests for Standard No. 109. Such a change would simplify the determination of test conditions for these latter tests and make them consistent with the other tests in Standard No. 109. Accordingly, JATMA's second requested change to the final rule previously published is adopted.

Clarification of references to maximum load ratings. Third, JATMA suggested a revision of section S4.2.1 of Standard No. 109 to clarify the references to maximum load ratings at the end of that section. As already noted, this section has been revised so as to permit manufacturers to individually submit maximum load ratings. In the course of that revision, the agency has clarified the references JATMA addressed in this comment.

The other three petitions for reconsideration indicated that there were more serious problems with the previously published final rule. The three

[1]Persons interested in obtaining a copy of Table I as it existed on June 14, 1982, may do so by writing to the Docket Section or calling it at (202) 426-2768.

[2]Standardization organizations are voluntary associations composed of representative of each of the member tire companies. The purpose of these standardization organizations is to establish and promulgate sound engineering standards for tires, rims, and their allied parts.

petitioners were the Rubber Manufactuers Association (RMA), a trade association composed of domestic tire manufacturers, Goodyear Tire & Rubber Co. (Goodyear), and the Copper Tire Company (Cooper).

Minimum tire size factor. All three of these petitioners objected to the requirement in the rule deleting the requirement for a minimum size factor. The essence of these objections was that, absent a minimum size factor, it would be possible for manufacturers to undersize their tires, and that this undersizing could lead to increased incidents of tire failure.

NHTSA still does not believe that a requirement for a minimum size factor is necessary. The size factor of a tire cannot change after the mold is set up to begin producing that size of tire. With all of the engineering and quality control effort involved in designing and producing new tire sizes, it is simply implausible that a tire manufacturer would either intentionally or inadvertently undersize the molds. The undersized tires that would be produced might save the manufacturers a few dollars per tire, but the savings would be more than offset by product liability awards and negative publicity generated. Since automobile manufacturers design cars to a tire's rated load, undersized tires would be overloaded on those cars, and would predictably exhibit higher failure rates than properly sized tires made by other manufacturers. This appears to be a very compelling disincentive to undersizing tires. Hence, the agency concludes that the minimum size factor is not needed in Standard No. 109.

Loading for endurance test. In addition, all three of these petitioners urged the agency to reconsider the changes in the loading of the tires for the endurance tests of Standard No. 109. For that test, Standard No. 109 formerly specified that tires be run for designated periods of time with the loads shown in various inflation columns in Table I. These loads averaged 85 percent of the maximum load of the tire for 4 hours, 93 percent of the maximum load for 6 hours, and 100 percent of the maximum load for 24 hours. Under the new rule published last December, the loads are now 85 percent for 4 hours, 90 percent for 6 hours, and 100 percent for 24 hours. In other words, there is a slight decrease in loading of three percent during the 6 hour phase of this test, while the loading for the other two phases remain constant.

NHTSA does not believe that this slight change will effect the results of the endurance test or its validity as a check of a tire's endurance. The commenter who addressed this issue noted only that there was a change in the 6 hour phase of the test and did not provide any explanation of why they thought that the impact of the change was significant. Accordingly, the loading for the endurance test set forth in the December rule is retained as previously published.

Loading for high speed test. The same three petitioners requested reconsideration of the changes in the loading for the high speed test. The standard requires that a tire must not exhibit any visible damage at the end of the test. Prior to the high speed test, the tire must be conditioned by being run at 50 miles per hour (mph) for two hours. Following this conditioning period, the tire is run for ½ hour at 75 mph, ½ hour at 80 mph, and ½ hour at 85 mph, for a total of 220 miles. The load used during the testing was shown in a particular inflation pressure column in Table I. The load averaged 85 percent of maximum load for alphanumeric tires, between 85 and 86 percent of maximum load for European radial tires, and 87 percent for the domestic P-metric radial tires. The new loading schedule for the high speed test specifies that the tires be loaded with 88 percent of the tire's maximum load. Hence, the new schedule would increase the load on the tire during this test by anywhere from one to three percent of the maximum load, depending on the type of tire.

The notice of proposed rulemaking to delete Table I (45 F.R. 57466; August 28, 1980) proposed that the load for the high speed test be 85 percent of the maximum load labeled on the sidewall of the tire. However, Chrysler, Ford, and General Motors all urged that this be increased to 88 percent in the final rule (the same level used in Standard No. 119 for tires other than passenger car tires) since the 85 percent figure would require them to use larger tires on a few of their models. The change to the 88 percent figure was made in the final rule.

RMA stated in its petition for reconsideration that the increase to 88 percent of maximum load was "significant and apparently inadvertent." RMA went on to say that while the agency had amended the proposal so as not to force unnecessary increases in tire sizes currently used,

it might now be permitting unnecessary decreases in the tire sizes used. Goodyear and Cooper both also argued that this increase in loading could result in the downsizing of tires.

The agency believes that its adoption of 88 percent of a tire's maximum load as the test condition for the high speed test was appropriate and did not make a significant change to Standard No. 109. Eighty-eight percent is the same level which has been used as the load for the high speed test for all tires for use on motor vehicles other than passenger cars since Standard No. 119 became effective. The experience with the testing under that Standard has not shown this loading to be high.

Aside from the fact that this is the same level of loading used for the high speed test for all other tires, it is appropriate that a tire be able to carry a high percentage of its maximum load. Indeed, a properly inflated tire should be able to carry 100 percent of its maximum load on the road. The very definition of the term "maximum load" implies such a capability.

However, for the high speed test, it is necessary to use a figure of less than 100 percent in order to account for the differences between actual on-road conditions and the laboratory test conditions and for the extreme stress to which the tire is subjected. Accordingly, a correction factor of 12 percent of the maximum load was included in the December final rule, which specified that the tire would be tested at 88 percent of its maximum load. This correction factor is admittedly less than the previous specified 13 to 15 percent. But the 12 percent correction factor has been used for testing tires under Standard 119 for seven years, and all experience shows that correction factor is sufficient to achieve its intended purpose. Absent data demonstrating the contrary, NHTSA can see no reason why this correction factor would not be adequate in Standard No. 109.

As to the significance of the load change, Cooper was the only one of the three petitioners which offered any data on that issue. In an attempt to support its argument, Cooper selected four of its largest alphanumeric tire sizes, and subjected them to an extended version of the high speed test until the tires failed. To run an extended test on a tire, the tester does not stop testing the tire after the 85 mph phase. Instead, he increases the test speed to 90 mph and continues to increase the test speed by 5 mph every ½ hour until the tire fails. Cooper's tests were done first at 85 percent of maximum load (the level formerly specified for these tires) for one set of tires of all four sizes and then at 88 percent of maximum load for another set of tires. Cooper's tests showed that, on average, its tires loaded at 85 percent failed at 367 miles shortly after beginnig the 105 mph phase of the extended test. Its tires loaded at 88 percent failed at 332 miles, after completing slightly over half of the 100 mph phase. Thus, the increased load caused a decrease of 35 miles or 9.5 percent. Cooper asserted that these results showed that the increase would shorten tire life on the road and therefore was a significant change to Standard No. 109.

NHTSA does not believe that Cooper's tests support either of its assertions. The high speed test is designed only to measure the ability of the cord body of the tire to retain the tread during sustained high speeds and the resulting high temperatures. NHTSA is unaware of any data even suggesting a positive correlation between miles accumulated before failure on an extended high speed test and predicted service life of a tire. The extended high speed test would be useful in determining the suitability of tires for use on a police pursuit car or a racing car, but, even for those vehicles, the mileage accumulated before failure would not be a valid predictor of service life in miles of the tires.

Moreover, NHTSA beleives that Cooper's data actually supports the agency's belief that the change in the loading conditions for the high speed test was insignificant. These data show that the tires passed the high speed test under both test loads by wide margins. In the extended high speed tests, Cooper's tires ran on average slightly over half of the 100 mph phase of the test under the 88 percent load before failing, while those under an 85 percent load failed shortly after entering the 105 mph phase of the test. In either case, the tires not only successfully completed the 85 mph phase, but also exceeded the high speed requirement of Standard 109 by a wide margin. Further, none of the tires were the sort that would be chosen for occasional high speed operations. These data reinforce the agency's expressed belief that the slight increase in stringency for the high speed test is an insignificant increase which will not alter the

results of any tests under the standard or require any redesign by tire manufacturers.

Goodyear and Cooper further asserted that the increase in the high speed test loading would allow the car manufacturers to substitute smaller tire sizes than those currently used on new cars. Such substitution could theoretically occur because section S4.2 of Standard No. 110 requires that the normal vehicle load on the tires not exceed the loading used for the high speed test in Standard No. 109. If, for example, the test load of a particular tire type was previously 86 percent of the maximum load rating and is now increased to 88 percent, the 2 percent increase in permissible normal vehicle load might permit the use of the next smallest size of that type of tire on a vehicle. However, none of the petitioners identified which models they believed could be shifted to smaller tires.

To test the petitioners' assertion, NHTSA checked the tires used on automobiles produced by U.S. manufacturers for the 1982 model year. All of these cars offered P-metric tires as standard equipment. As noted above, P-metric tires were formerly tested at an average 87 percent of their maximum load. The one percent increase in load allowed by the December rule will not allow any substitution of a smaller tire size on any of these cars.

All of the 1982 passenger cars offered by the Japanese and European manufacturers use European metric radials as standard equipment. These tires previously were tested at an average of between 85 and 86 percent of maximum load, so it is theoretically possible in isolated cases that the increase would permit the use of smaller tires. However, a survey by the agency of all 1982 models did not reveal any instances in which smaller tire size could in fact be substituted on the cars.

The type of tire for which substitution would most likely be feasible is the alphanumeric tires, formerly tested at 85 percent of their maximum load. This type of tire is no longer offered as standard equipment on any new passenger car. Based on the trend towards the use of radial tires, the alphanumeric tire is very unlikely to be offered as standard equipment on any future new cars. The agency's examination of the possibility of substitutions involving these three types of tires did not reveal any instances where the substitution of smaller tires would be an actual possibility.

Even if there were one or two foreign vehicles on which smaller tire sizes could be and are used, the agency does not believe that that fact would be significant. All new cars must comply with the requirements of section S4.2 of Standard No. 110. This section states that the maximum vehicle load on a tire must not exceed the tire's maximum load, as labeled on its sidewall, and that the normal vehicle load must not exceed 88 percent of that maximum load. Tires and vehicles complying with these requirements would not, in this agency's judgment, present any increased safety hazards over vehicles and tires where the vehicle normal load did not exceed 85 percent of the maximum load. It would be inappropriate for this agency to prohibit the use of smaller tire sizes in situations where the smaller sizes can be used without compromising the safety of the finished automobile.

After considering the above arguments, NHTSA has determined that none of the arguments show that 88 percent figure adopted in the December rule was inappropriate to use for high speed testing or that the increase in loading was a significant change to the standard. Accordingly, the agency is retaining the 88 percent figure.

However, NHTSA is in the process of issuing a proposal which may result in changing the load for high speed testing. The proposal seeks comments on alternative ways of changing the loads used for high speed testing under Standard No. 109 and for the temperature resistance tests used under the Uniform Tire Quality Grading Standards (UTQGS) so that they are the same. Prior to the deletion of Table I from Standard No. 109, the loads used for the two regulations were identical. As a result of changes to Standard No. 109 and UTQGS necessitated by the deletion of Table I, that is no longer true. (See the December 1981 final rule and the interim final rule issued at 47 F.R. 25930; June 15, 1982.)

Public notice of new tire sizes or tire/rim concepts. RMA argued that it was essential that there be advance public notice of new tire sizes or new tire/rim concepts. Cooper agreed with RMS on this point. It stated that a smaller tire manufacturer such as itself would not learn in advance of new tire size designations since it does not belong to any foreign standardization

organizations and does not have day-to-day contact with the vehicle manufacturers. Additionally, Cooper argued that advance notice would preclude dangerous intermix situations.

The agency does not believe that such formalized advance notice of the introduction of new tire sizes or new tire/rim concepts is necessary for any safety-related reason, as explained in the final rule on this subject. NHTSA does note that advance notice would be useful for competitive reasons. It would aid some manufacturers in learning about the introduction of new sizes and concepts and in producing similar tires of their own. If more manufacturers make a particular tire size, a consumer can expect the competition to produce lower retail prices of the tire size.

On the other hand, the tire tables themselves introduced anti-competitive elements to the market, and may have served as an impediment to market entry.

The NHTSA does not believe publishing notices about new tire sizes and concepts is a necessary or proper function for a safety agency, or that such a mechanism is appropriate for requirement in a safety standard. It appears to be a fairly simply matter for any manufacturer to keep abreast of the activities of foreign standardization organizations either through membership in a standardization organization or on their own. Nevertheless, the agency will consider publishing notice of new tire concepts and sizes when information about them is received from individual manufacturers if those concepts and sizes have not already been publicized as a result of being coordinated with a standardization body. The process of providing such notice would simply inform all interested persons about the introduction. It would not provide any opportunity for those persons to file submissions which would have the effect of delaying the introduction of the new sizes or concepts.

Effective date. The changes made by this notice simply correct an oversight by the agency and change the reference to be used in certain tire tests from maximum load data furnished by a manufacturer or a standardization organization to the maximum load labeled on the tire sidewall. None of these changes specify different test procedures or additional requirements, nor do they require any leadtime for preparation by tire or vehicle manufacturers. Failure to make these changes effective on the date of publication could give rise to a situation described by Michelin, where a tire size which meets all existing safety requirements could not legally be sold until a maximum load rating for that size was published by a standardization organization. Since no additional leadtime is needed to adjust to these changes and since failure to make these changes effective at publication could result in needless delays in the introduction of new tire sizes, NHTSA has determined that good cause exists for making these changes effective upon publication.

Analyses or regulatory impacts. NHTSA has analyzed the impacts of this action and determined that it is neither "major" within the meaning of Executive Order 12291 nor "significant" within the meaning of the Department of Transportation regulatory policies and procedures. These revisions will avert a situation where new tire sizes meeting all existing safety requirements could have their introduction delayed, and simplify the determination of appropriate test conditions. If these revisions have any effect on costs, that effect should be a minimal cost savings. The agency does not believe that these amendments would have any effect on the price of new tires. Innovative tire manufacturers and consumers might benefit from a slightly earlier introduction of new tire technology. Again, this impact would be very minimal. Accordingly, a full regulatory evaluation has not been conducted.

Issued on August 12, 1982.

Raymond A. Peck, Jr.
Administrator

47 F.R. 36180
August 19, 1982

TABLE I—MINIMUM BREAKING ENERGY VALUES (INCH-POUNDS)

TABLE I—A—FOR BIAS PLY TIRES WITH DESIGNATED SECTION WIDTH 6 INCHES AND ABOVE

	Maximum Permissible Inflation Pressure						
Cord Material	*32 lb/in²*	*36 lb/in²*	*40 lb/in²*	*240 kPa*	*280 kPa*	*300 kPa*	[*340 kPa*
Rayon	1,650 in.-lbs.	2,574 in.-lbs.	3,300 in.-lbs.	1,650 in.-lbs.	3,300 in.-lbs.	1,650 in.-lbs.	3,300 in.-lbs.
Nylon or Polyester	2,600 in.-lbs.	3,900 in.-lbs.	5,200 in.-lbs.	2,600 in.-lbs.	5,200 in.-lbs.	2,600 in.-lbs.	5,200 in.-lbs.]

TABLE I—B—FOR BIAS PLY TIRES WITH DESIGNATED SECTION WIDTH BELOW 6 INCHES

	Maximum Permissible Inflation Pressure						
Cord Material	*32 lb/in²*	*36 lb/in²*	*40 lb/in²*	*240 kPa*	*280 kPa*	*300 kPa*	[*340 kPa*
Rayon	1,000 in.-lbs.	1,875 in.-lbs.	2,500 in.-lbs.	1,000 in.-lbs.	2,500 in.-lbs.	1,000 in.-lbs.	2,500 in.-lbs.
Nylon or Polyester	1,950 in.-lbs.	2,925 in.-lbs.	3,900 in.-lbs.	1,950 in.-lbs.	3,900 in.-lbs.	1,950 in.-lbs.	3,900 in.-lbs.]

TABLE I—C—FOR RADIAL PLY TIRES

	Maximum Permissible Inflation Pressure						
Size Designation	*32 lb/in²*	*36 lb/in²*	*40 lb/in²*	*240 kPa*	*280 kPa*	*300 kPa*	[*340 kPa*
Below 160 Millimeters	1,950 in.-lbs.	2,925 in.-lbs.	3,900 in.-lbs.	1,950 in.-lbs.	3,900 in.-lbs.	1,950 in.-lbs.	3,900 in.-lbs.
160 Millimeters or above	2,600 in.-lbs.	3,900 in.-lbs.	5,200 in.-lbs.	2,600 in.-lbs.	5,200 in.-lbs.	2,600 in.-lbs.	5,200 in.-lbs.]

TABLE I—D—FOR TIRES WITH 60 LB./IN² MAXIMUM PERMISSIBLE INFLATION PRESSURE AND MAXIMUM LOAD RATING OF 880 POUNDS AND ABOVE

Cord Material	*Inch-Pounds*
Rayon	1,650
Nylon or Polyester	2,600

TABLE I—E—FOR TIRES WITH 60 LB./IN² MAXIMUM PERMISSIBLE INFLATION PRESSURE AND MAXIMUM LOAD RATING BELOW 880 POUNDS

Cord Material	*Inch-Pounds*
Rayon	1,000
Nylon or Polyester	1,950

TABLE II—TEST INFLATION PRESSURES

Maximum Permissible Inflation Pressure	32 psi	36 psi	40 psi	60 psi	240 kPa	280 kPa	300 kPa	[340 kPa
Pressure to be used in tests for physical dimensions, bead unseating, tire strength, and tire endurance	24	28	32	52	180	220	180	220
Pressure to be used in test for high-speed performance	30	34	38	58	220	260	220	260]

[53 F.R. 17950—May 19, 1988. Effective: June 20, 1988)]

PREAMBLE TO MOTOR SAFETY STANDARD NO. 110

Tire Selection and Rims—Passenger Cars
(Docket No. 18)

A proposal to amend § 371.21 of Part 371, Initial Federal Motor Vehicle Safety Standards, by adding Standard No. 109, New Pneumatic Tires—Passenger Cars; and Standard No. 110, Tire Selection and Rims—Passenger Cars; was published in the *Federal Register* on July 22, 1967 (32 F.R. 10812).

Interested persons have been afforded an opportunity to participate in the making of the amendment.

Compliance with the labeling requirements of Standard No. 109, established in accordance with section 201 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1421), and the tread wear indicator requirements found in the standard may necessitate the modification of tire molds. Several tire manufacturers requested that additional time be allowed to modify these tire molds. After evaluation of all data received, it was determined that an effective date of August 1, 1968, for paragraphs S4.2.1 and S4.3 would provide a reasonable amount of time to accomplish the necessary mold modifications.

Many comments stated that no practical way is known to permanently affix a label onto the tire sidewall, as would have been required by proposed paragraph S4.3.1 until such time as a label is molded into or onto the tire. Accordingly, S4.3.1 of Standard No. 109 has been modified to permit, until August 1, 1968, the use of a label or tag containing the required labeling information not permanently molded into or onto the tire.

Many comments objected to the limitations imposed by the maximum tire section width dimensions specified in the tables of the notice. The Administrator has determined that additional latitude is necessary, and therefore Standard No. 109 specifies that to provide for tire growth, protective side ribs, ornamentation, manufacturing tolerances, and design differences for each tire size designation actual tire section width and overall tire width may exceed the section width specified in Table I of the Standard by 7 percent.

In response to requests, additional tire size designations and load/inflation schedules were added when necessary information was available. In addition, Table I of Standard No. 109 and Table II of Standard No. 110 have been combined to collate related information.

Persons desiring an amendment to Standard No. 109 adding tires not presently listed, should submit sufficient pertinent information relative to these tires in 10 copies to the Secretary of Transportation; Attention: Motor Vehicle Safety Performance Service, National Highway Safety Bureau, Federal Highway Administration, U.S. Department of Transportation, Washington, D.C. 20591.

Data received have shown that the rim references indicated in the proposed Standards were inadequate in coverage. Therefore, a more comprehensive list of foreign and domestic trade association publications containing appropriate rim standards or practices has been referenced in the Standards.

Data received demonstrated that the bead unseating and tire strength requirements were inappropriate for certain groups of small tires. Accordingly, tires were regrouped and the test values revised to provide requirements for these small tires that are proportional to the requirements for other sizes of tires.

Although Standard No. 109 applies to tires for use on passenger cars manufactured after 1948, some of the tires covered by the Standard may also be used on earlier model vehicles.

The testing procedures set forth in the Standard, size designations, and related data are based upon existing standards or practices using information furnished by such organizations as the Society of Automotive Engineers, Federal Trade Commission, Tire and Rim Association, European Tire and Rim Technical Organization, Japanese Standards Association, Japan Automobile Tire Manufacturers Association, Rubber Manufacturers Association, Tyre Manufacturers Conference, Ltd., and the Society of Motor Manufacturers and Traders, Ltd.

To permit production of sufficient quantities of tires complying with the requirements of Standard No. 109 after its effective date of January 1, 1968, Standard No. 110 applies to passenger cars manufactured on or after April 1, 1968.

A single table of load/pressure values for radial ply tires was included in the notice and this was supported by many comments. Other comments stressed the importance of including different load/pressure values for optimum tire deflections. Although a single table of load/pressure schedules combining these values for these radial ply tires would be desirable, it was not considered advisable to include such a table in the standard promulgated under the present notice.

In accordance with section 201 of the Act, S4.3 of Standard No. 109 requires that each tire be labeled with the name of the manufacturer or his brand name and an approved code mark to permit the tire seller to identify the tire manufacturer upon the purchaser's request. Any tire manufacturer desiring an approved code mark should apply for his code number assignment to the Secretary of Transportation; Attention: Motor Vehicle Safety Performance Service, National Highway Safety Bureau, Federal Highway Administration, U.S. Department of Transportation, Washington, D.C. 20591.

Several comments, including the suggested use of a "load range" system, will be considered for future rule-making. (See 32 F.R. 14279).

Since it was clearly the intent of the Congress that, to enhance the safety of the general public, Federal Motor Vehicle Safety Standards for tires become effective as soon as practicable, and since no adverse comments were received pertinent to the proposed effective date presented in the advance notice of proposed rulemaking (32 F.R. 2417), at a Government-industry technical meeting, and in the notice of proposed rulemaking (32 F.R. 10812), and no undue burden was demonstrated, good cause is shown that an effective date earlier than 180 days after issuance is in the public interest.

In consideration of the foregoing, § 371.21 of Part 371, Initial Federal Motor Vehicle Safety Standards, is amended . . . Standard No. 109 becomes effective January 1, 1968, and Standard No. 110 becomes effective April 1, 1968.

(Secs. 103, 119, National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407); delegation of authority of Mar. 31, 1967 (32 F.R. 5606), as amended Apr. 6, 1967 (32 F.R. 6495), July 27, 1967 (32 F.R. 11276), Oct. 11, 1967 (32 F.R. 14277), November 8, 1967).

Issued in Washington, D.C., on November 8, 1967.

Lowell K. Bridwell,
Federal Highway Administrator

32 F.R. 15792
November 16, 1967

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 110

Tire Selection and Rims—Passenger Cars
(Docket No. 18R)

Motor Vehicle Safety Standard No. 109 (32 F.R. 15792), as amended (32 F.R. 17938), specifies tire dimensions and laboratory test requirements for bead unseating resistance, strength, endurance, and high speed performance; defines tire load ratings; and specifies labeling requirements for new pneumatic tires for use on passenger cars manufactured after 1948. Motor Vehicle Safety Standard No. 110 (32 F.R. 15798) specifies tire selection and rims requirements to prevent tire overloading.

Figures 2 and 3 of Standard No. 109 are drawings of the bead unseating test fixture used in performing the test specified in S5.2.

Section S5.4.2.3 specifies the 50 miles-per-hour test schedules for the tire endurance test.

Tables I–A through I–H list the various tire types and sizes with proper load and inflation values.

After review of Petitions for Reconsideration received under Docket No. 18R, the Administrator has determined that certain parts of Standard No. 109 require clarification, the tire tables need revision to include a number of new sizes and there is need for a table listing a new series of tires.

In addition, Standard No. 110 requires an additional table to list alternative rims for tire and rim combinations not presently covered by the standard.

Therefore, Standard No. 109 is being amended by—

(a) Revising Figures 2 and 3, which depict the bead unseating test fixture, by adding one additional dimension to Figure 2 and a center line and tangent line to Figure 3;

(b) Specifying that the test required by S5.4.2.3 be conducted without pressure adjustment or other interruption;

(c) In table I–A through I–H

(1) Adding additional tire size designations;

(2) Adding footnotes permitting the use of the letter "H", "S", or "V";

(3) Correcting typographical errors;

(d) Adding Table I–J which lists a new series of low section height tires.

In addition, Standard No. 110 is being amended by—

(a) Revising paragraph S4.4.1 to include alternative rims, not presently listed in the references cited in the definition of Test Rim in S3 of Standard No. 109; and

(b) Adding a new table of approved alternative rims.

Since these amendments provide clarification and alternative means of compliance, relieve restrictions, and impose no additional burden on any person, notice and public procedure hereon are unnecessary. The Administrator finds, for good cause shown, that no preparatory period is needed to effect compliance and it is therefore in the public interest to make the amendments effective immediately.

In consideration of the foregoing, § 371.21 of Part 371, Federal Motor Vehicle Safety Standards, Standard No. 109 (32 F.R. 15792), as amended (32 F.R. 17938), and Standard No. 110 (32 F.R. 15798), are amended, effective April 11, 1968. . . .

(Secs. 103, 119, National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407); delegation of authority of March 31, 1967 (32 F.R. 5606), as amended Nov. 8, 1967 (32 F.R. 15710)).

Issued in Washington, D.C., on April 11, 1968.

Lowell K. Bridwell,
Federal Highway Administrator.

33 F.R. 5944
April 18, 1968

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 110

Tire Selection and Rims—Passenger Cars
(Docket No. 18)

On September 11, 1968, the Federal Highway Administration published in the *Federal Register* amendments to Standard Nos. 109 and 110 (33 F.R. 12842). Omitted from publication as part of Appendix A of Standard No. 109 were Tables 1–A through 1–J. For the convenience of persons using the tables the preamble to the amendments published September 11, 1968, and the text of the amendments, as corrected by the addition of the omitted tables are published below. Additionally, Appendix A of Standard No. 110 has been changed to specify the information that should be submitted with requests for the addition of alternative rim sizes.

Federal Motor Vehicle Safety Standard No. 109 (32 F.R. 15792), as amended (32 F.R. 17938 and 33 F.R. 5944), specifies tire dimensions and laboratory test requirements for bead unseating resistance, strength, endurance and high speed performance; defines tire load ratings; and specifies labeling requirements for new pneumatic tires for use on passenger cars manufactured after 1948. Motor Vehicle Safety Standard No. 110 (32 F.R. 15798) as amended (33 F.R. 5949) specifies tire selection and rim requirements to prevent tire overloading.

Tables 1–A through 1–J of Standard No. 109 list various tire types and sizes with proper load and inflation values.

Standard No. 109 is being amended to designate Tables 1–A through 1–J as Appendix A of Standard No. 109.

In addition, Table 1–H is being amended by adding additional tire size designations.

Table I of Standard No. 110, is a list of alternative rims for tire and rim combinations that are not contained in any reference in § 3 of Standard No. 109.

Standard No. 110 is being amended to designate Table I as Appendix A of Standard No. 110.

In addition, the table is being amended by adding, as alternative rims for tire size 8.55 x 15, rim sizes 5½–JK, 5½–JJ and 5½–J; F70–14, rim size 7JJ; and G70–14, rim size 7JJ.

Additionally, guidelines by which persons requesting routine additions to Appendix A of Standard No. 109 and Appendix A of Standard No. 110, are set forth as introductory language to both appendices. The guidelines provide an abbreviated rulemaking procedure for adding tire sizes to Standard No. 109, whereby the addition becomes effective 30 days from date of publication in the *Federal Register* if no comments are received. If comments objecting to the amendment warrant, the Administration will provide for additional rulemaking pursuant to the Rule Making Procedures for Motor Vehicles Safety Standards (23 C.F.R. 216).

Since these amendments provide an alternative means of compliance, relieve restrictions, and impose no additional burdens on any person, notice and public procedure hereon are unnecessary and the Administrator finds, for good cause shown, that no preparatory period is needed to effect compliance and it is in the public interest to make the amendments effective immediately.

In consideration of the foregoing, Section 371.21 of Part 371, Federal Motor Vehicle Safety Standards, Standard No. 109 (32 F.R. 15792), as amended (32 F.R. 17938 and 33 F.R. 5944), and Standard No. 110, (32 F.R. 15798), as amended (33 F.R. 5949), are amended effective this date as set forth below.

These amendments are made under the authority of Sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation from the Secretary of Transportation, Part I of the Regulations of the Office of the Secretary (49 C.F.R. § 1.4(c)).

Issued in Washington, D.C. on September 27, 1968.

John R. Jamieson, Deputy
Federal Highway Administrator

33 F.R. 14964
October 5, 1968

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 110

Tire Selection and Rims

(Docket No. 74–25; Notice 2)

This notice amends the definition of "test rim" in 49 CFR 571.109 (Motor Vehicle Safety Standard No. 109) and modifies related provisions of that section and section 571.110 (Motor Vehicle Safety Standard No. 110). A conforming amendment is made to similar provisions in section 571.119 (Motor Vehicle Safety Standard No. 119). The notice of proposed rulemaking on which this amendment is based was published on July 10, 1974 (39 F.R. 25329).

The definition of "test rim" has previous to this amendment referenced the 1967 and earlier editions of publications of various foreign and domestic tire and rim associations as the source for determining rim specifications and appropriate tire/rim matching information for testing tires to the requirements of Motor Vehicle Safety Standard No. 109, and for equipping passenger cars pursuant to Motor Vehicle Safety Standard No. 110. The Rubber Manufacturers' Association petitioned that this reference be changed because the publications have become outdated in terms of the rim information they provide. This amendment, which adopts the proposed rule of July 10, 1974, in essentially the form proposed, deletes the references to the 1967 and earlier publications and substitutes for them the publications of the various associations current at the time of tire manufacture.

Under the amendment, a "test rim" will be any rim listed for use with a tire size designation in any of the current publications of the various foreign and domestic tire and rim associations. The listing will apply to all tires that fit the description (by tire size designation, use category, etc.) unless the publication itself or a separately published manufacturer's document states otherwise. A manufacturer wishing to except any tire manufactured by him from any listing would be expected to request the association to publish the exception in its publication. If it does not, the manufacturer must himself publish the exception in his own listing, which he must distribute to his dealers, this agency, and to any member of the public on request. The language of the proposal is clarified, and a conforming amendment made to Standard No. 119 to show that an exception must be published in each association publication listing the tire and rim combination. The amendment further specifies that a "listing" of a rim must contain dimensional specifications, including diagrams, for the rim. This is necessary to provide for uniformity of rim dimensions and reflects the pres ent practice of association publications of publishing such dimensional specifications. However, dimensional specifications or a diagram of a rim need not be included in manufacturers' separate listings if the specifications and diagram for the rim appear in each association publication where it is listed.

By referencing the current publications, the amendment ends the need for Appendix "A" of Standard No. 110, which lists tire/rim combinations approved for use subsequent to the 1967 and earlier associations publications. The associations and various manufacturers should ascertain that all tire/rim combinations presently listed in that Appendix are incorporated into at least one of their respective publications before the effective date of this amendment. Moreover, the addition of new tire/rim combinations subsequent to the effective date becomes the sole responsibility of the industry. Appendix "A" of Standard No. 109, listing tire size designations, is not affected by this amendment.

An effect of the amended definition of test rim is to clarify this agency's position that each tire must be able to pass each performance requirement (except that for physical dimensions) of Standard No. 109 with any rim with which it is listed, regardless of rim width, unless that tire is specifically excepted from each listing where it appears. The requirements for physical dimensions must be met only on a test rim of the width specified for the tire size designation in Standard No. 109. A tire failing the requirements on any test rim would be considered as having failed the requirements on all test rims. This continues existing NHTSA enforcement policy.

One of the two comments received regarding the proposal objected to this aspect of the amendment, arguing that some manufacturers have traditionally certified conformity on the basis of test results using only the test rims of the specified test rim width and that no safety problems had been encountered. The NHTSA believes, however, that the interest of safety demands that manufacturers ensure that tires certified as conforming to Standard No. 109 will conform to the standard's requirements on any rim which the manufacturer lists for use with the tire and with which the tire may consequently be used in service. This position has been reflected in the guidelines for the additions of new tire/rim combinations to the Appendix of Standard No. 110, which have required that the manufacturer demonstrate conformity to Standard No. 109 on each newly requested rim. If a manufacturer doubts the ability of his tires to conform to the standard on certain recommended rims, he has the option of excepting his tires from being used with those rims. No other objections to the proposed rule were received.

In light of the above, amendments are made to 49 CFR §§ 571.109, 571.110, and 571.119 . . . .

Effective date: August 5, 1975 for Standard No. 109 and 110; March 1, 1975, for Standard No. 119. The amendment to Standard No. 119 is of a clarifying nature, and should be made effective with the existing effective date of that standard. The amendment does not require substantial leadtime for conformity, and it is found for good cause shown that an effective date less than 180 days from publication is in the public interest.

(Secs. 103, 119, 201, 202, Pub. L. 89–563, 80 Stat. 718; 15 U.S.C. §§ 1392, 1407, 1421, 1422; delegation of authority at 49 CFR 1.51.)

Issued on January 31, 1975.

James B. Gregory
Administrator

40 F.R. 5529
February 6, 1975

MOTOR VEHICLE SAFETY STANDARD NO. 110

Tire Selection and Rims—Passenger Cars

S1. Purpose and scope. This standard specifies requirements for tire selection to prevent tire overloading.

S2. Application. This standard applies to passenger cars.

S3. Definitions.

"Accessory weight" means the combined weight (in excess of those standard items which may be replaced) of automatic transmission, power steering, power brakes, power windows, power seats, radio, and heater, to the extent that these items are available as factory-installed equipment (whether installed or not).

"Curb weight" means the weight of a motor vehicle with standard equipment including the maximum capacity of fuel, oil, and coolant, and, if so equipped, air conditioning and additional weight optional engine.

"Maximum loaded vehicle weight" means the sum of—

(a) Curb weight;

(b) Accessory weight;

(c) Vehicle capacity weight; and

(d) Production options weight.

"Normal occupant weight" means 150 pounds times the number of occupants specified in the second column of Table I.

"Occupant distribution" means distribution of occupants in a vehicle as specified in the third column of Table I.

"Production options weight" means the combined weight of those installed regular production options weighing over 5 pounds in excess of those standard items which they replace, not previously considered in curb weight or accessory weight, including heavy duty brakes, ride levelers, roof rack, heavy duty battery, and special trim.

"Vehicle capacity weight" means the rated cargo and luggage load plus 150 pounds times the vehicle's designated seating capacity.

"Vehicle maximum load on the tire" means that load on an individual tire that is determined by distributing to each axle its share of the maximum loaded vehicle weight and dividing by two.

"Vehicle normal load on the tire" means that load on an individual tire that is determined by distributing to each axle its share of the curb weight, accessory weight, and normal occupant weight (distributed in accordance with Table I) and dividing by two.

S4. Requirements.

S4.1 General. Passenger Cars shall be equipped with tires that meet the requirements of Motor Vehicle Safety Standard No. 109, "New Pneumatic Tires—Passenger Cars."

S4.2 Tire load limits.

S4.2.1 [The vehicle maximum load on the tire shall not be greater than the applicable maximum load rating specified in one of the publications described in S4.4.1(b) of Motor Vehicle Safety Standard No. 109 for the tire's size designation and type. (46 F.R. 61473. Effective: 6/16/82)]

TABLE I

Occupant Loading and Distribution for Vehicle Normal Load for Various Designated Seating Capacities

Designated Seating Capacity, Number Occupants	*Vehicle Normal Load, Number of Occupants*	*Occupant Distribution in a Normally-Loaded Vehicle*
2 thru 4	2	2 in front
5 thru 10	3	2 in front 1 in second seat

S4.2.2 The vehicle normal load on the tire shall not be greater than the test load used in the high speed performance test specified in S5.5 of Motor Vehicle Safety Standard No. 109 for that tire.

S4.3 Placard. A placard, permanently affixed to the glove compartment door or an equally accessible location, shall display the—

(a) Vehicle capacity weight;

(b) Designated seating capacity (expressed in terms of total number of occupants and in terms of occupants for each seat location);

(c) [The tire rating specified in one of the publications described in S4.4.1(b) Motor Vehicle Safety Standard No. 109 for the tire size at that inflation pressure is not less than the vehicle load on the tire for that vehicle loading condition. (46 F.R. 61473. Effective: 6/16/82)]

(d) Vehicle manufacturer's recommended tire size designation.

S4.3.1 No inflation pressure other than the maximum permissible inflation pressure may be specified unless—

(a) It is less than the maximum permissible inflation pressure;

(b) The vehicle loading condition for that pressure is specified; and

(c) The tire load rating from Table I of Motor Vehicle Safety Standard No. 109 for the tire at that pressure is not less than the vehicle load on the tire for that vehicle loading condition.

S4.4 Rims.

S4.4.1 Requirements. Each rim shall:

(a) Be constructed to the dimensions of a rim that is listed pursuant to the definition of "test rim" in paragraph S3. of § 571.109 (Standard No. 109) for use with the tire size designation with which the vehicle is equipped.

(b) In the event of rapid loss of inflation pressure with the vehicle traveling in a straight line at a speed of 60 miles per hour, retain the deflated tire until the vehicle can be stopped with a controlled braking application.

33 F.R. 14969
October 5, 1968

PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 111

Rearview Mirrors—Passenger Cars and Multipurpose Passenger Vehicles

(Docket No. 13)

Motor Vehicle Safety Standard No. 111 (32 F.R. 2413) specifies requirements for rearview mirrors for use in passenger cars, multipurpose passenger vehicles, and passenger car and multipurpose passenger car equipment.

Paragraph S2, entitled "Application" of Motor Vehicle Safety Standard No. 111 (32 F.R. 2413) requires that the application of the Standard be as follows: "This standard applies to passenger cars, multipurpose passenger vehicles, and passenger car and multipurpose passenger vehicle equipment."

Paragraph S3.2.1.2 entitled "Mounting" of Motor Vehicle Safety Standard No. 111 (32 F.R. 2413) requires that outside mirrors installed on passenger cars and multipurpose passenger vehicles be mounted as follows: "The mounting shall provide a stable support for the mirror and neither the mirror nor the mounting shall protrude further than the widest part of the vehicle body, except to the extent necessary to meet the requirements of S3.2.1.1."

The National Traffic Safety Agency has determined that the mirror mounting may exceed the width of the vehicle to the extent necessary to produce a field of view meeting or exceeding the requirements of paragraph S3.2.1.1 of Standard No. 111 and that it would not be practicable to extend the application of the standard to replacement parts for vehicles manufactured before the effective date of the standard. Therefore, the standard is being amended to apply to passenger cars and multipurpose passenger vehicles, and to permit a mirror to protrude further than the widest part of the vehicle body to the extent necessary to produce a field of view meeting or exceeding the field-of-view requirements of the standard.

This amendment is made under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C., secs. 1392, 1407) and becomes effective January 1, 1968.

Issued in Washington, D.C., on March 29, 1967.

Lowell K. Bridwell,
Acting Under Secretary of
Commerce for Transportation

33 F.R. 5498
April 4, 1967

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 111

Rearview Mirrors

(Docket No. 74–20; Notice 2)

This notice amends Standard No. 111, *Rearview Mirrors* (49 CFR 571.111) to allow installation of truck-type mirror systems in multipurpose passenger vehicles and to extend the coverage of the standard to trucks and buses.

The NHTSA proposed in a notice published on May 1, 1974 (39 F.R. 15143) to amend Standard No. 111, to specify minimum requirements for mirror size, capability, and location which would be applicable to all trucks, buses, and motorcycles, and to establish an option which would allow multipurpose passenger vehicles to meet either the present passenger-car mirror requirements or to satisfy the requirements proposed in the notice for trucks and buses. Standard No. 111 currently applies only to passenger cars and multipurpose passenger vehicles, specifying the same rearview mirror requirements for each. The NHTSA has determined that a need exists to extend the standard's coverage to other vehicle types that presently lack uniform Federal regulation in order to ensure observance of minimum mirror performance levels essential to motor vehicle safety.

The NHTSA also proposed in the notice published May 1, 1974 to require that all mirrors required by the standard, except those specified for motorcycles, be designed to reflect an image of unit magnification, thereby limiting any deviation from unit magnification to normal production variations and not variations which are the result of design. To this end it was proposed that the term "substantially" be deleted where it modifies "unit magnification" in the text of Standard No. 111.

Interested persons were afforded an opportunity to submit comments on the proposal by July 1, 1974 and due consideration has been given to the 36 comments received.

Two commenters opposed deletion of the term "substantial" where it modifies "unit magnification" on the ground that only mirrors of precisely unit magnification will now be acceptable. This view is erroneous. The interpretation followed by the NHTSA—and proposed to be incorporated in Standard No. 111 in this issue of the Federal Register—is that deviations from unit magnification are acceptable under the standard as amended below provided that the deviations do not exceed normal manufacturing tolerances.

All comments generally agreed with the NHTSA proposal to extend a Federal rearview mirror standard to trucks, buses and motorcycles. However, several comments recommended mirrors of larger area than those required in the NHTSA proposal for trucks and buses, and suggested the use of convex mirrors in addition to unit magnification mirrors. Others recommended specific requirements for school buses and clarification of the proposed standard for motorcycles with regard to location and area of mirrors and use of convex mirrors. While the NHTSA considers that the proposed extension of the scope of Standard No. 111 to cover trucks and buses will promote efficient rearward visibility, it agrees with those who have urged further research regarding requirements for school buses and motorcycles. Consequently, Standard No. 111 is amended by this notice to extend the scope of its coverage to trucks and buses (including school buses). At the same time, however, the NHTSA is proposing in this issue of the Federal Register to amend Standard No. 111 to specify new rearview mirror requirements for motorcycles and further requirements for school buses.

The majority of comments favored the proposal that trucks, buses, and multipurpose passenger vehicles with a GVWR of 10,000 pounds or less comply either with the present passenger car mirror requirements, or with new requirements specifying outside mirrors on both sides of the vehicle with not less than 19.5 in^2 of reflective surface. This option is intended to overcome difficulties caused by classifying trucks, buses, and multipurpose passenger vehicles into groups specifying one mirror system adequate to fulfill the safety needs of all.

In addition, several commenters felt that heavy commercial vehicles, such as truck tractors, moving vans, and dump trucks, needed outside mirrors larger than 50 in^2. The NHTSA has determined that the 50 in^2 mirror is adequate for buses and for smaller multipurpose passenger vehicles and trucks. However, for multipurpose passenger vehicles and trucks with a GVWR exceeding 25,000 pounds, a 75 in^2 mirror appears better to meet the safety need. Therefore, while this notice amends Standard No. 111 to require that multipurpose passenger vehicles, trucks, and buses with a GVWR of more than 10,000 pounds have outside mirrors of not less than 50 in^2 of reflective surface, the NHTSA is proposing in this issue of the Federal Register to amend Standard No. 111 to require mirrors of at least 75 in^2 of reflective surface on multipurpose passenger vehicles and trucks with a GVWR of 25,000 pounds or more.

Several persons contended with regard to multipurpose passenger vehicles, trucks, and buses that the provision requiring that mirrors be adjustable by "tilting in both the horizontal and vertical direction" did not take into account the methods used to mount mirrors on these types of vehicles. Large mirrors, such as the so-called "West Coast" mirror which affords approximately 96 square inches of reflective surface area, are commonly mounted on rigid brace assemblies. These mirrors can be adjusted to provide the driver a view to the rear. However, once they are locked into place they are not capable of "tilting in both the horizontal and vertical direction." While mirrors mounted on ball sockets are fully adjustable in the horizontal and vertical directions by tilting, the NHTSA finds no reason to preclude the use of a mirror that possesses full adjustment capability and is only locked into a position once it satisfies the particular driver's viewing needs.

The NHTSA has decided to delete the words "by tilting" from the requirements for multipurpose passenger vehicles, trucks, and buses. The rule requires that mirrors on such vehicles "shall be adjustable in both the horizontal and vertical directions to view the rearward scene."

In consideration of the foregoing, Motor Vehicle Safety Standard No. 111, 49 CFR 571.111, is amended. . . .

Effective date: February 12, 1976.

(Secs. 103, 119, Pub. L. 89563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

Issued on: August 6, 1975.

James B. Gregory
Administrator

40 F.R. 33825
August 12, 1975

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 111

Rearview Mirrors

(Docket 74–20; Notice 4)

This notice responds to four petitions for reconsideration of the notice published August 12, 1975 (40 F.R. 33825) which amended Federal Motor Vehicle Safety Standard No. 111, *Rearview Mirrors* (49 CFR 571.111), to allow installation of truck-type mirror systems in multipurpose passenger vehicles and to extend coverage of the standard to trucks and buses.

Petitions for reconsideration were received from American Motors, Ford, General Motors, and the Motor Vehicle Manufacturers Association. They all asked the NHTSA to amend the standard to include a statement that the eye reference points to be used to determine compliance with the field of view requirements set forth in S4.1.1 and S4.2.1 may also be "at a nominal location appropriate for any 95th percentile driver." The NHTSA had determined by a previously published interpretation (32 F.R. 5498) that the standard in effect in April of 1967 permitted location of the driver's eye reference point in this manner. The recent amendments did not change this aspect of the standard. However, in order to resolve any doubt concerning the applicability of the prior interpretation, the agency proposed in a notice published August 12, 1975, to formally reaffirm this interpretation by amending the standard. Petitioners seek immediate adoption of this proposal. The NHTSA agrees that the standard may be amended at this time to incorporate the previous interpretation. Therefore, Federal Motor Vehicle Safety Standard No. 111, *Rearview Mirrors* (49 CFR 571.111), is amended. . . .

Effective date: February 19, 1976.

(Secs. 103, 119, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.50.)

Issued February 12, 1976.

James B. Gregory
Administrator

41 F.R. 7510
February 19, 1976

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 111

Rearview Mirrors

(Docket No. 74–20; Notice 5)

This notice amends Standard No. 111, *Rearview Mirrors*, to establish separate requirements for school buses, to increase the amount of reflective surface required for mirrors on multipurpose passenger vehicles and trucks with a GVWR of 25,000 pounds or more, and to extend the coverage of the standard to motorcycles.

By final rule published by the National Highway Traffic Safety Administration (NHTSA) on August 12, 1975 (40 F.R. 33825), Standard No. 111 (49 CFR 571.111) was amended to allow installation of truck-type mirror systems on multipurpose passenger vehicles and to extend the coverage of the standard to trucks and buses. As amended, the standard specified identical requirements for all types of buses. No distinction was made between commercial buses and school buses. No requirements were set out for motorcycles, as had been proposed in an earlier notice. Further, the standard imposed the same requirements for all multipurpose passenger vehicles, trucks, and buses with a GVWR of more than 10,000 pounds.

At the time of these changes, the NHTSA had completed further research and considered comments submitted by participants in that rulemaking, and determined that the promulgation of separate rearview miror requirements for motorcycles, school buses, and multipurpose passenger vehicles and trucks with a GVWR of 25,000 pounds or more would ensure the provision of minimum performance levels essential to motor vehicle safety. Therefore, a notice proposing these changes was also published on August 12, 1975 (40 F.R. 33828), and forms the basis of the present amendments.

Interested persons were afforded an opportunity to submit comments on the proposal by September 26, 1975, and due consideration has been given to the 24 comments received. The National Motor Vehicle Safety Advisory Council did not take a position on the proposed amendments. (Active dockets concerning rearview mirrors are Docket No. 74–20 and Docket No. 71–3a.)

Commenters generally agreed with the NHTSA proposal to establish rearview mirror requirements for motorcycles. However, the Grote Manufacturing Company oposed the optional use of convex mirrors, contending that their use on motorcycles would be hazardous due to the distortion of distance characteristics of convex mirrors and the unfamiliarity of young drivers with them. The NHTSA has decided that both plane and convex motorcycle mirrors should be permitted, since available data does not support the contention that convex mirrors would be hazardous. The SAE Recommended Practice J268(a), "Rear View Mirrors—Motorcycles," specifies criteria for both plane and convex mirrors, and convex mirrors are presently in common usage on motorcycles.

There were also recommendations for both larger and smaller minimum reflective area requirements for motorcycle mirrors, and one recommendation for field-of-view performance requirements instead of a reflective area requirement. The amendment specifies 12.5 in^2 of reflective surface for a plane motorcycle mirror or 10 in^2 of reflective surface for a convex mirror. The NHTSA concludes that these required reflective surface areas will ensure a safe level of rearview visibility on motorcycles. The NHTSA finds the larger reflective area is needed on the plane mirror to offset its smaller field-of-view compared to that of a convex mirror. It is

contemplated that field-of-view performance requirements will be developed in future rulemaking.

The State of California commented that the SAE Recommended Practice J964a, specified in paragraph S11 of the standard, does not include a procedure for measuring the reflectance of convex mirrors, and suggested that a different procedure be specified. This suggestion is not well taken since, contrary to California's comment, the Recommended Practice does include a procedure for measuring convex mirror reflectance.

This amendment excepts school buses from the general bus requirements specified in paragraphs S6 and S7 of the standard, as amended by this notice, and establishes a new paragraph, S9, which requires school buses to be equipped with outside mirrors of unit magnification with not less than 50 in^2 of reflective surface and, except for forward control vehicles, with a convex cross-view mirror that has a minimum of 40 in^2 of reflective surface and an average radius of curvature not less than 12 inches and not greater than 25 inches.

The Grote Manufacturing Company contended that a 50 in^2 plane mirror on the right side of a school bus is inadequate, but the NHTSA believes that the 50 in^2 mirror in common use offers sufficient reflective area. Likewise, the NHTSA cannot agree with the views of the States of California and Illinois that a 40 in^2 cross-view mirrors is insufficient. Manufacturers can meet this requirement with the 7½ inch-diameter convex mirror which is commonly installed on school buses and which has been found to be adequate.

California also opposed the proposal that forward control school buses be excluded from the cross-view mirror requirements, stating that cross-view mirrors might be necessary on some forward control configurations. The NHTSA will consider this aspect of California's comment in future rulemaking in which the agency plans to develop field-of-view performance tests.

The State of Illinois, noting that the proposed amendments specified requirements for cross-view mirrors on school buses, recommended that the title of Standard No. 111, *Rearview Mirrors*, be shortened to "Mirrors." The NHTSA believes that such a change is unnecessary and might create confusion since the industry has come to associate the existing title with the standard number. Therefore, there is no change in the title of Standard No. 111 even though this amendment adds a provision for cross-view mirrors.

Several commenters, including Blue Bird Body Company, the State of Illinois, and the Grote Manufacturing Company, disagreed with the preamble discussion concerning preemption that appeared in the notice proposing this amendment (40 F.R. 33828), in regard to Federal versus State requirements for rearview mirrors on school buses. There appears to be some confusion concerning the provision of the National Traffic and Motor Vehicle Safety Act of 1966, P.L. 89–563 (15 U.S.C. § 1392(d)) that allows states and political subdivisions to impose higher standards of performance than is required by Federal standards in the case of vehicles procured for their own use. Blue Bird Body Company commented that the interpretation in the preamble to the proposal "would allow local governments and other parties to specify potentially conflicting requirements with all NHTSA standards." This is incorrect. Section 103(d) of the National Traffic and Motor Vehicle Safety Act provides that no State or political subdivision of a State shall have authority to establish a motor vehicle safety standard governing the same aspect of performance of a motor vehicle or of motor vehicle equipment as a Federal standard, unless it is identical to the Federal standard. The only exception, also provided in section 103(d) of the Act, is that a State may establish a safety requirement applicable to motor vehicles or motor vehicle equipment procured for its own use if such requirement imposes a higher standard of performance than the Federal standard. This means that a State may impose requirements additional to those specified in an applicable Federal standard only if the vehicles are procured specifically for use by the State or its political subdivision. Therefore, a State may not require vehicles manufactured or sold for use by private parties to meet any standards not identical with Federal standards, even if the State standard would require a higher level of performance. Use of the phrase "higher standard of performance" means that the State standard must not

conflict with the Federal standard but may contain additional requirements.

The phrase does not mean that a State standard will be subjectively analyzed as a whole to determine its comparable worth in safety terms in relation to a Federal standard. Such an interpretation would create impracticable results. Finally, as stated in the preamble of the notice proposing these amendments, the National Traffic and Motor Vehicle Safety Act of 1966 does not prohibit a nongovernmental purchaser of a vehicle from contracting with a manufacturer or dealer for additional safety features beyond those required by Federal motor vehicle safety standards.

The majority of comments favored the proposal that multipurpose passenger vehicles and trucks with a GVWR of more than 10,000 and less than 25,000 pounds, and buses, other than school buses, with a GVWR of more than 10,000 pounds continue to be equipped with outside mirrors of unit magnification on both sides of the vehicle, each with not less than 50 in^2 of reflective surface.

The Teamsters Union recommended that the proposed 75-square-inch reflective area requirement for trucks and multipurpose vehicles with a GVWR of 25,000 pounds or more be increased to a 96-square-inch requirement. The NHTSA has carefully considered the views of the Teamsters, but must conclude, based on available studies, that the proposed 75-square-inch mirror is adequate for safety purposes. Further, a larger reflective area requirement would prohibit the new truck mirrors that are designed to be mounted below the driver's line of sight. Use of these mirrors is encouraged by the agency since they do not obstruct the forward view of the driver, as do the larger "West Coast" mirrors.

The obstruction of the forward view due to the mounting location of some of the larger mirrors can create a potential safety hazard, as pointed out by several commenters. However, rather than incorporating mounting location as a requirement of the standard at this time, the NHTSA believes the problem can better be solved through viewing performance requirements to be promulgated in the future.

The State of California suggested that minimum width requirements be specified for side-mounted mirrors, and that truck classification be based on a system other than GVWR. We see no need to specify width requirements. The California comments provided no evidence, and the agency has no indication, that manufacturers would circumvent the purposes of the standard by providing long and narrow side mirrors. No circumvention of this sort has occurred in the case of mirrors currently available on the market. The NHTSA recognizes that truck classification based on GVWR creates some artificiality in the applicability of requirements, but other methods of classification create similar problems. These problems can better be corrected in future rulemaking with the specification of field-of-view performance requirements.

Finally, several commenters recommended that combination plane and convex mirrors be required for large multipurpose passenger vehicles and trucks, in order to increase the field of view. The NHTSA agrees that the use of convex mirrors on larger vehicles would be of some benefit because of the increased field of view they would provide. Therefore, the agency publishes in this issue of the *Federal Register* a proposal to amend Standard No. 111 to specify the optional use of plane and convex mirror combinations on buses other than school buses, multipurpose passenger vehicles, and trucks that have a GVWR of 10,000 pounds or more.

This amendment also clarifies the deflection requirements for inside rearview mirror mountings on passenger cars. The amendment specifies that the mounting is required to "break away" when the test force is applied to the reflective surface of the mirror in any direction that forms an angle of up to 45° with the forward longitudinal direction. The amendment clarifies that the mounting is required to deflect, collapse, or "break away" when the force is applied to the reflective surface in a generally forward direction.

The provision of Standard No. 111 regarding mirror construction is amended to provide that the "average" reflectance value of the reflective film employed on any mirror required by the standard must be at least 35 percent. The purpose of this amendment is to make clear that the failure of any individual point or points on the reflective surface of a mirror to reflect 35 percent

of a light source does not constitute a failure to comply with the standard if the average reflectance of the total points comprising the reflective surface is at least 35 percent.

The amendment incorporates into the mirror construction requirements the current test procedures for measurement of average reflectance value found in the Society of Automotive Engineers Recommended Practice J96a, August, 1974.

Standard No. 111 is further amended by this notice to add a definition of the term "mirror of unit magnification." This definition incorporates a previous NHTSA interpretation to the effect that precise "unit magnification" is not required by the standard if any deviations are not in excess of normal manufacturing tolerances. The definition provides that a prismatic day-night adjustment rearview mirror, one of whose positions provides unit magnification, is considered a unit magnification mirror.

The notice proposing these amendments (40 F.R. 33828) included a proposal that the term "driver's eye reference point" referred to in S5.1.1 and S5.2.1 of the standard as amended by this notice, be changed to "driver's eyes reference points" in order to more accurately describe the locations to which the term refers. The notice further proposed that the standard be amended to permit location of the driver's eye reference point at "a nominal location appropriate for any 95th percentile male driver," as had been established in a previously published NHTSA interpretation (32 F.R. 5498). At the time of the proposal, Standard No. 111 only provided that the location of the driver's eye reference point "shall be that established in Motor Vehicle Safety Standard No. 104." The proposal provided that the location of the eye reference point could be derived through either formula.

In response to four petitions for reconsideration, by final rule issued February 19, 1976 (41 F.R. 7510), Standard No. 111 was amended to partially adopt the proposed changes regarding driver's eye reference point. The standard was amended to incorporate the previous NHTSA interpretation which allowed location of the driver's eye reference point "at a nominal location appropriate for any 95th percentile adult male driver." The petitioners had requested that this aspect of the proposal be adopted immediately.

Today's amendment completes the adoption of the proposed changes by modifying the term "driver's eye reference point" to read "driver's eye reference points." As amended, the last sentence of S5.1.1 and S5.2.1 now reads: "The location of the driver's eye reference points shall be those established in Motor Vehicle Safety Standard No. 104 (§ 571.104) or a nominal location appropriate for any 95th percentile adult male driver." Even with these changes, however, there still appears to be much confusion concerning this aspect of the field-of-view performance requirements for passenger cars. General Motors has recommended that the reference to Standard No. 104 in paragraphs S5.1.1 and S5.2.1 be deleted, since that standard's designation of "eye reference points" is ambiguous. In light of the evident confusion, the NHTSA is proposing in this issue of the *Federal Register* to amend paragraphs S5.1.1 and S5.2.1 of Standard No. 111 to specify that location of driver's eye reference points shall be determined in accordance with the procedure found in SAE Recommended Practice J1050, "Describing the Driver's Field of View," Section 7 (September, 1973). References to Standard No. 104 and to the "nominal location" method of determining the eye reference points would be deleted from the standard.

These amendments should have only a minimal economic and environmental impact, since manufacturers are currently equipping vehicles with the same type mirrors that are required by the amendments.

In consideration of the foregoing, the amendments of Motor Vehicle Safety Standard No. 111 (49 CFR 571.111) are adopted without change. . . .

Effective date: February 26, 1977.

(Secs. 103, 119, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.50.)

Issued on August 17, 1976.

John W. Snow
Administrator

41. F.R. 36023
August 26, 1976

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 111

Rearview Mirrors

(Docket No. 74–20; Notice 07)

This notice responds to petitions for reconsiderations of a recent amendment of Standard No. 111, *Rearview Mirrors*, by reducing upcoming mirror size requirements to the level presently specified by the standard.

By notice published August 26, 1976 (41 F.R. 36023), paragraph S8.1 of Standard No. 111 (49 CFR 571.111) was established to increase from 50 square inches to 75 square inches the amount of reflective surface required for plane mirrors on multipurpose passenger vehicles and trucks with a GVWR of 25,000 pounds or more. The new requirement becomes effective February 26, 1977. In the same issue of the *Federal Register* the NHTSA published a proposal to further amend Standard 111 to provide for the optional use of plane and convex mirror combinations on multipurpose passenger vehicles and trucks with a GVWR of 25,000 pounds or more (41 F.R. 36037). The proposed requirements would allow manufacturers to equip their larger vehicles with either a 75-square-inch mirror of unit magnification or a combination mirror system comprised of a 45-square-inch plane mirror and a 25-square-inch convex mirror.

Mr. M. W. Urban and the White Motor Company petitioned the NHTSA to revoke the amendment requiring vehicles over 25,000 pounds to have plane mirrors with 75 square inches of reflective surface. Petitioners were concerned that the proposal to allow plane and convex combinations for the larger vehicles would not be made a final rule by the time of the February 26, 1977, effective date for the 75-square-inch plane mirror requirement. They noted that this would have the effect of prohibiting the use of combination mirrors after February 26, 1977, although they are presently allowed and would be allowed again in the future under the outstanding proposal.

The NHTSA has determined that petitioners' argument has merit. As stated in the preamble to the August 26, 1976, proposal, the NHTSA recognizes that the larger vehicles (GVWR greater than 25,000 pounds) have rearward visibility problems that can create potential safety hazards, and that the use of both plane and convex mirrors on these vehicles should help to increase rearward visibility. The NHTSA does not wish to preclude the combination mirror systems currently being used on the MPV's and trucks, since most of these systems would meet dimensional specifications set forth in the outstanding proposal.

While the NHTSA concluded that the larger plane mirrors are necessary on heavy vehicles not equipped with combination mirrors, many manufacturers are already equipping these vehicles with "West Coast" mirrors that have 96 square inches of reflective surface. Therefore, postponement of the 75-square-inch plane mirror requirement for heavy vehicles should not significantly reduce motor vehicle safety.

The rearview mirror amendments published on August 26, 1976, established the requirement that school buses be equipped with plane mirrors having 50 square inches of reflective surface. Mr. Urban's petition for reconsideration also requested that this requirement be postponed and modified to include separate requirements for small school buses. The petition stated that smaller plane mirrors in combination with convex mirrors should be allowed on van-type school buses on an optional basis.

The NHTSA considered all comments to the notice proposing these school bus requirements prior to issuance of the final rule. It was determined that 50-square-inch plane mirrors were necessary on school buses to provide the driver an adequate view to the rear along both sides of the vehicle. Since Mr. Urban did not submit his views regarding van-type school buses during the specified comment period, his comments will only be considered in future rulemaking on this subject.

In consideration of the foregoing, the number "75 in^2" in paragraph S8.1 of Standard No. 111 (as published August 26, 1976 (41 F.R. 36023) and effective February 26, 1976) is amended to read "50 in^2."

Effective date: The change may be made immediately to the *Federal Register* text published August 26, 1976 (41 F.R. 36023) and is effective February 26, 1977.

(Sec. 103, 119, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.50.)

Issued on December 22, 1976.

John W. Snow
Administrator

41 F.R. 56813
December 30, 1976

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 111

Rearview Mirror Systems
(Docket No. 71-3a; Notice 6)

ACTION: Final rule.

SUMMARY: This notice amends Federal Motor Safety Standard No. 111 (rearview mirrors) by permitting the use of convex rearview mirrors on the exterior, passenger side of passenger cars and light trucks, to meet the field of view requirements when they are not met by the inside rearview mirror. Previously, only flat (plane) outside mirrors could be used to supplement an inside mirror which did not fully satisfy those requirements. This amendment is issued in response to a petition by General Motors. The agency believes that this amendment will result in improved driver rearward visibility, thereby reducing motor vehicle accidents and injuries.

EFFECTIVE DATE: September 2, 1982.

SUPPLEMENTARY INFORMATION: Federal Motor Vehicle Safety Standard ("FMVSS") No. 111 establishes requirements for the use, field of view, and mounting of motor vehicle rearview mirrors. With respect to passenger cars, the standard requires that manufacturers mount flat (sometimes referred to as "plane" or "unit magnification") mirrors both inside the vehicle and outside the vehicle on the driver's side. The inside mirror must, except as specified below, have a field of view at least 20 degrees wide and extending to the horizon beginning not more than 200 feet behind the vehicle. In cases where the interior mirror does not meet the specified field of view requirements, a plane, exterior mirror must be mounted on the passenger's side of the car. If a passenger side mirror is required to be used, it must be stably mounted, may not have sharp points or edges which could injure pedestrians, and must be adjustable. Reflectance (image brightness) criteria were also established. (If a manufacturer uses an interior mirror which meets the field of view requirements, and wishes to install an exterior passenger side mirror voluntarily, it may use any type of mirror for that purpose.)

In the case of light trucks, manufacturers may either comply with the passenger car requirement or have flat outside mirrors with reflective surface area of not less than 19.5 square inches on each side of the vehicle.

On May 26, 1976, General Motors Corporation (GM) petitioned the agency to amend FMVSS 111 to permit the use of convex mirrors on the passenger side of cars and light trucks, where the interior mirror did not meet the field of view requirements of the standard. GM pointed out in its petition that convex mirrors would provide a wider field of view than the flat mirrors of the same size. On August 26, 1976, the agency issued a notice of proposed rulemaking to amend the standard as requested by GM, but with certain limitations as to the characteristics of the convex mirrors which could be used. These limitations were considered necessary because some convex mirrors present a distorted image which could cause problems for some drivers.

The 1976 NPRM was incorporated in a proposal for a major upgrading of all the requirements in FMVSS 111. See F.R. 51657, November 6, 1978. Among the provisions of the 1978 proposal were requirements increasing the minimum field of view of the mirror system, more specific breakaway and shatter resistance requirements, and image luminance (another measure of image brigthness) criteria.

The 1978 NPRM also proposed to permit the use of convex outside mirrors which met certain additional requirements. The additional

requirements, which were designed to reduce or eliminate problems certain drivers could experience when viewing images in convex mirror; included specifications of minimum and maximum radii of curvature, maximum variation of the radius of curvature for a given mirror, identification of convex mirrors (through the use of orange border) and discussions in owner's manuals for passenger cars and light trucks which use convex mirrors regarding the presence of the convex mirrors, the location of the mirrors, and the significance of the orange border.

The agency has determined that it is appropriate to take final action on the portions of the 1978 proposed rule relating to passenger side convex mirrors. The remaining provisions of the 1978 NPRM require further evaluation by the agency and will be addressed in a future notice. Therefore, the agency is amending FMVSS 111 to permit the use of convex mirrors on the passenger side of passenger cars (and also light trucks, since they may comply with FMVSS 111 by meeting the car requirements) subject to the following restrictions.

1) The radius of curvature of any convex mirror used shall not exceed 65 inches;

2) The radius of curvature of such a mirror may not be less than 35 inches;

3) The measured radius of curvature of a convex mirror, as specified in the agency's test procedure, may not vary by more than 12.5 percent from the mean radius of curvature;

4) Each convex mirror shall be readily identifiable by the following words etched on the lower portion of the glazing surface: "OBJECTS IN MIRROR ARE CLOSER THAN THEY APPEAR".

The need for each of these requirements, and the comments received on the proposed convex mirror requirements, are discussed below.

Comments on the NPRM. Several commenters questioned the desirability of permitting the use of convex mirrors on passenger cars and light trucks. Convex automotive mirrors exhibit a number of characteristics which differ from the common plane mirrors now in general use. One is that the image of an object viewed in a convex mirror is smaller than that of the same object viewed in a plane mirror. Therefore, such an object will appear to be farther away than it would when viewed in a plane automotive mirror. A driver who has always used plane mirrors might, when viewing a car to his or her rear in the immediately adjacent lane to the right (such as in a passing maneuver), perceive that that car is further to the rear than it actually is. In that situation, the driver might move to the right and change lanes before it is safe to do so. Some commenters believed that the combination of a plane and convex mirrors, and therefore differing image sizes, on the same car would add to the confusion. Other problems experienced by some users of convex mirrors include double vision, eyestrain, and nausea.

Research by the agency and by the mirror manufacturers indicate that these problems with convex mirrors can be greatly mitigated by certain restrictions and by steps to assure that drivers are aware that the mirror being used is not a standard plane mirror. Image distortion problems, for example, can be substantially reduced by regulating variation in the radius of curvature. The agency's NPRM specified that the radius of curvature of any portion of the mirror may not vary more than 12.5 percent from the mean radius of curvature for the entire mirror. To alert the driver that a convex mirror is being used, the agency is requiring both a statement in the vehicle owner's manual and a clear warning on the mirror itself.

The agency believes that, based on all available research, these safety criteria are necessary to reduce to within acceptable bounds any potential problems which drivers may experience with convex mirrors. In this regard, the agency has relied significantly upon a contract study performed by Vector Enterprises, Incorporated, for the agency, in which various convex mirrors meeting the specifications in the 1978 NPRM were evaluated. The passenger side convex mirror was found to be highly desirable in such maneuvers as moving to the right into an adjacent lane. The main safety benefit of such a system is that it provides an expanded field of view of the right, rear quadrant area adjacent to the vehicle, thus reducing the need of the driver to turn around to view that area directly. The study concluded that minimizing the total time a driver's attention is diverted from the forward area through the addition of a passenger side convex mirror should provide safety benefits. Another finding of that study was that drivers'

abilities to use convex mirrors significantly improved with experience.

Several comments were also received on the minimum allowable radius of curvature for convex mirrors. Smaller radius of curvature mirrors provide a wider field of view but have smaller image sizes. The Vector study found that a radius range of 40 to 60 inches provided the best results, and the 1978 proposal specified a 40 inch minimum radius. Donnelly Mirrors stated that mirrors with about 10 percent smaller radii of curvature would still provide acceptable performance, based on several studies it cited. Therefore, in light of the agency's analysis of these studies, the agency is specifying a 35 inch minimum radius of curvature for convex mirrors.

The 1978 proposal also specified a 60 inch maximum radius of curvature for convex mirrors. Several commenters questioned the need for a maximum specification, since plane mirrors have always been permitted on the passenger side of cars and light trucks, and plane mirrors effectively have an infinite radius. Nevertheless, the agency feels that a maximum specification is necessary, to limit the range of convexities and therefore image minification to which drivers are exposed and to assure to the maximum extent possible that drivers are, whenever convex mirrors are used, aware due to image differences that the vehicle is equipped with such a mirror. Consistent with the available studies and to allow greater manufacturing flexibility, a 65 inch maximum radius is being established in this final rule.

The 1978 NPRM established a criterion of 12.5 percent for the maximum permissible variation in the radius of curvature over the surface of a convex mirror, and that criterion is being maintained in the final rule. Some commenters recommended reliance on the European criterion of 15 percent (using a different measuring device and excluding the areas of the mirror close to the edge). However, Donnelly Mirrors built a strong case in its comment on the 1978 NPRM for the need for a stringent distortion criterion. As Donnelly points out, low distortion mirrors reduce many of the problems drivers could experience with convex mirrors (double vision, nausea, dizziness). Further, they point out that mirrors of the quality level specified in the proposed standard are now available commercially at reasonable cost. Therefore, the agency cannot justify reducing that criterion. Variation in the radius of curvature would be measured by the procedure specified in the 1978 NPRM.

The proposed standard specified that convex mirrors must have an orange border to alert drivers that the mirror was not planar. The proposal also asked about other methods, including a written warning on the mirror, to accomplish this purpose. Chrysler Corporation recommended that the former approach not be used, since the orange border might be misinterpreted as being a styling feature and conveys no inherent, specific meaning. Rather, several vehicle and mirror manufacturers suggested that the words "OBJECTS IN MIRROR ARE CLOSER THAN THEY APPEAR" should be etched along the bottom edge of the mirror, to give a clear warning. Such a warning is common practice on current convex mirrors, in fact. One European mirror manufacturer suggested that the etched warning would be costly to apply and could impair the image viewed in the mirror. Some vehicle manufacturers suggested that the statement in the owner's manual would provide an adequate warning or that no warning at all was necessary.

Based on the previously discussed research, the agency remains convinced that a warning on the mirror itself is necessary. The fact that a convex mirror image appears different from that of a plane mirror does not, in the agency's view, provide an adequate warning that objects viewed in the convex mirror are closer than they appear. Further, the etched warning would serve as a reminder to the driver with each use and would assist drivers who had not read the owner's manual. Finally, the etched warning conveys a much clearer warning than the rather ambiguous orange border. With regard to the issue of image impairment, the agency's engineering judgment involving convex mirrors having this etched warning indicates that any such impairment caused by relatively small lettering on the bottom edge of the mirror surface is minimal. Further, the fact that such warnings are commonly used on current convex mirrors is a strong indication that the cost is not excessive. Therefore, the agency is requiring that convex mirrors used to comply with FMVSS 111 must have the words mentioned above etched on the bottom edge of the mirror surface in letters 3/16 to 1/4 inch high.

Rolls Royce argued that the agency should not limit the permitted convex mirror surface configurations to spherical surfaces, since spherical mirrors exhibit spherical aberration. Spherical mirrors (which are designed to have a single radius of curvature over the entire mirror surface) are typically used for automotive applications since the more optically correct parabolic mirror surfaces would be prohibitviely expensive to manufacture. However, should a manufacturer desire to offer a parabolic convex mirror and demonstrate that the mirror's surface configuration has a degree of accuracy equivalent to that specified in the standard for spherical surfaces, the agency would initiate rulemaking to permit the use of the parabolic mirror.

It should be emphasized that these requirements for convex mirrors do not apply to after-market mirrors or to convex mirrors which are not required to meet the field of view requirements specified in FMVSS 111. However, the agency strongly encourages vehicle and mirror manufacturers to consider using and designing mirrors to comply with the requirements of this standard even where not strictly required by the standard. The agency will continue to study the safety benefits of various rearview mirror systems and may establish requirements applicable to additional mirrors in future rulemaking.

The agency is making this amendment effective immediately upon publication, since the amendment "relieves a restriction" within the meaning of 5 U.S.C. 553(d)(1), by permitting the use of convex mirrors where they were previously unauthorized. The agency also finds that making this amendment effective immediately is in the public interest, in accordance with section 103(c) of the National Traffic and Motor Vehicle Safety Act, since doing so will permit the use of mirrors which provide wider fields of view for the 1983 model year. Also, since the amendment relieves a restriction in FMVSS 111, providing 180 days lead time is unnecessary.

NHTSA has determined that this proceeding does not involve a "major rule" within the meaning of section 1, paragraph (b), of Executive Order 12291 because it is not likely to have an effect on the economy of $100 million or more, to result in a major increase in costs or prices, or to have a significant adverse effect on competition, employment, investment, productivity, innovation, or the ability of United States firms to meet foreign competition. Similarly, this action is not deemed "significant" for purposes of Department of Transportation procedures for internal review of regulatory actions. The economic impacts of this amendment are so minimal as to not warrant preparation of a full regulatory evaluation, since the amendment merely permits the use of certain rearview mirrors which were previously prohibited.

Pursuant to the Regulatory Flexibility Act, the agency has considered the impact of this rulemaking action on small entities. The agency certifies that this action will not have a significant economic impact on a substantial number of small entities. Therefore, a regulatory flexibility analysis is not required for this action. The agency has concluded that few, if any, manufacturers of rearview mirrors are small entities and that the impacts of this rule on those companies which decide to take advantage of the new alternative method of compliance should be small.

Issued on August 18, 1982.

Raymond A. Peck, Jr.
Administrator

47 F.R. 38698
September 2, 1982

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 111

Rearview Mirror Systems

Docket No. 71-3a; Notice 7

ACTION: Final rule and response to petitions.

SUMMARY: This notice responds to a petition for reconsideration filed by Volkswagen of America regarding a recent amendment to Federal Motor Vehicle Safety Standard (FMVSS) 111, and to a related petition for rulemaking filed by Toyota Motor Corporation. The amendment to FMVSS 111 permitted the use of exterior passenger side convex mirrors on passenger cars and trucks, multipurpose passenger vehicles and buses other than schoolbuses with a gross vehicle weight rating of 10,000 pounds or less to meet the field of view requirements of that standard. The amendment required that such convex mirrors must have "indelibly etched" on the mirror's surface the warning "Objects in Mirror Are Closer Than They Appear." The amendment also specified a maximum radius of curvature requirement for such mirrors. The agency is denying Volkswagen requests that the warning and maximum radius requirements be deleted, but in response to Volkswagen's and Toyota's petition, is modifying the warning requirements to permit the warning to be permanently marked on the mirror by methods other than etching.

DATE: This amendment is effective on August 26, 1983.

SUPPLEMENTARY INFORMATION: On September 2, 1982, NHTSA published an amendment to FMVSS 111, Rearview Mirrors. Prior to this amendment, the standard specified that field of view requirements (i.e., minimum permissible viewing area behind the vehicle) could be met only by using plane mirrors. This amendment, issued in response to a petition from General Motors Corporation, permitted field of view requirements to be met in part by using an exterior, passenger side convex mirror meeting certain specifications. Among these specifications were the requirements that a warning ("Objects in Mirror Are Closer Than They Appear") must be "indelibly etched" on the mirror and that the radius of curvature of the convex mirror must not exceed 65 inches. The warning was deemed necessary to alert drivers to the fact that the driver is using a convex mirror, which provides a different image than the common plane mirror. The maximum radius of curvature requirements was deemed necessary to limit the range of different image sizes to which drivers would be exposed and to provide an additional warning that the mirror being used is convex. With regard to the latter point, larger radius convex mirrors provide images which approach those of plane mirrors. The agency concluded that large radius convex mirrors might mislead drivers into thinking that a mirror was plane, when in fact it was convex and the distances from following vehicles was less than the drivers would realize.

With respect to the warning requirement, Volkswagen argues in its October 4 petition for reconsideration that the requirement imposes a trade barrier, since other countries do not require a warning and an English language warning would be of no use in non-English speaking countries. The agency agrees that this requirement would, as a practical matter, require manufacturers to use different convex mirrors (at least with regard to the warning lettering) in vehicles sold in the U.S. than in vehicles sold in some other countries. However, as noted in the September 2 final rule, the agency's research indicates that providing a clear warning is necessary, given the relative inexperience of U.S.

drivers in using automotive convex mirrors. Accordingly, the agency is denying Volkswagen's request to delete the warning requirement altogether.

Nevertheless, in response to Volkswagen's petition and an October 6, 1982 rulemaking petition submitted by Toyota Motor Corporation, the agency will amend the warning requirement to facilitate compliance with it. Making this change may reduce the burdens associated with having to provide different mirrors for different markets. Toyota pointed out that the requirement that the warning be "indelibly etched" on the mirror unnecessarily restricts the methods available for assuring that the warning is permanently marked on the mirror. "Etching" implies that lettering is produced by the corrosive action of an acid on the mirror. Toyota suggests that sandblasting or glass-based ink printing can equally well produce permanent lettering on mirrors whose reflective surface is at the back side of the mirror glass. The agency agrees that manufacturers should be given additional flexibility in choosing their means of compliance. The agency is amending FMVSS 111 to permit the use of any process which assures that the warning is "permanently and indelibly marked" on the mirror's reflective surface. The agency cannot foresee all possible methods which might be used to "permanently and indelibly" mark warning lettering on a mirror and does not wish to unnecessarily limit the use of new technology in this area. The agency notes that exterior-surface painting or the use of a plastic decal, either of which could be removed or become illegible, would not be deemed "permanent and indelible" by the agency.

Volkswagen also objected to the warning requirement on the basis that no advance notice or opportunity to comment was provided with regard to the enactment of that provision. However, the agency specifically sought comment on this issue and suggested that warning lettering might be required. See 43 FR 51660, November 6, 1978. Further, the provision was adopted in response to several comments suggesting that warning lettering be required.

With regard to the maximum radius of curvature requirement, Volkswagen argues that the requirement differs from European requirements (which impose no maximum) and therefore imposes a trade barrier. Volkswagen also argues that large radius mirrors closely resemble plane mirrors in terms of the image provided, and therefore present no safety concerns. However, the agency still feels this requirement is necessary, given the relative inexperience of U.S. drivers with convex mirrors. The maximum radius requirement assures that drivers will be able to tell from the appearance of the image when they are using a convex mirror. It also assures that drivers will not be exposed to a wide range of image sizes and corresponding depth perception and distortion effects. Further, mirrors meeting the U.S. maximum radius requirements may still be used in European countries, which have no maximum radius requirement. Therefore, this requirement will be retained.

The agency is making this amendment effective immediately upon publication, since the amendment "relieves a restriction" within the meaning of 5 U.S.C. 553(d)(1), by permitting the use of additional methods for marking mirrors. The agency also finds that making this amendment effective immediately is in the public interest, in accordance with section 103(c) of the National Traffic and Motor Vehicle Safety Act, since doing so will facilitate the use of additional mirrors as soon as possible. Also, since the amendment relieves a restriction in FMVSS 111, providing 180 days lead time is unnecessary.

NHTSA has determined that this proceeding does not involve a "major rule" within the meaning of section 1, paragraph (b), of Executive Order 12291 because it is not likely to have an effect on the economy of $100 million or more, to result in a major increase in costs or prices, or to have a significant adverse effect on competition, employment, investment, productivity, innovation, or the ability of United States firms to meet foreign competition. Similarly, this action is not deemed "significant" for purposes of Department of Transportation procedures for internal review of regulatory actions. The economic impacts of this amendment are so minimal as to not warrant preparation of a full regulatory evaluation, since the amendment merely permits the use of additional methods for labeling rearview mirrors.

Pursuant to the Regulatory Flexibility Act, the agency has considered the impact of this rulemaking action on small entities. I certify that this action will not have a significant economic impact on a substantial number of small entities. Therefore, a regulatory flexibility analysis is not required for this action. The agency has concluded that few, if any, manufacturers of rearview mirrors are small entities and that the impacts of this

rule on those companies which decide to take advantage of the new alternative methods of labeling should be small. Since this action will impose no new costs, the action will not affect small governmental units or other organizations which purchase automobiles.

In consideration of the foregoing, Section 5.4.2 of 49 CFR 571.111 is revised to read as follows:

§ *571.111 Standard No. 111; Rearview Mirrors*

* * * * *

Section 5.4.2 Each convex mirror shall have permanently and indelibly marked at the lower edge of the mirror's reflective surface, in letters not less than 3/16 of an inch nor more than 1/4 inch high the words "Objects in Mirror Are Closer Than They Appear."

* * * * *

Issued on August 19, 1983

Diane K. Steed,
Deputy Administrator

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 111

Rearview Mirrors

[Docket No. 81-21; Notice 2]

ACTION: Final rule.

SUMMARY: This rule amends Federal Motor Vehicle Safety Standard (FMVSS) 111 to permit the use of nonuniform radius of curvature school bus mirrors to view the area immediately in front of the bus. Previously, only uniform radius mirrors could be used for this purpose. This action is taken in response to a petition from the North Carolina State Board of Education, and is intended to permit the use as original equipment of mirrors which provide a wider field of view of the area in front and along the side of the bus. The improved view will aid in detecting the presence of children in those areas.

EFFECTIVE DATE: September 6, 1983.

SUPPLEMENTARY INFORMATION: FMVSS 111 establishes requirements for mirror systems used on a variety of motor vehicles, including school buses. One requirement of that standard with regard to school buses is that those vehicles must have a crossview mirror permitting the bus driver to view the area in front of the bus. These mirrors are intended to aid bus drivers in determining, prior to moving from a stopped position (typically after loading or unloading children at a bus stop), whether any children are located in the area immediately in front of the bus. Being able to check those areas is important since, on average, approximately 40 pedestrians each year are involved in school-bus-related accidents.

Prior to the amendments made by this notice, the standard provided that crossview mirrors must be convex and have at least 40 square inches of reflective surface. Such mirrors must have a single radius of curvature which is at least 12 inches but no more than 25 inches. These specifications were intended to assure not only that the image views in the mirror would not be unduly distorted and would be large enough to be clearly seen, but also that the field of view of the mirror would be great enough to permit a view of the entire area in front of the bus.

North Carolina Board of Education petitioned the agency to permit the use of one specific type of mirror manufactured by Mirror-Lite Co. The radius of curvature of this mirror varies from 3.5 inches near the outer edge of the mirror to approximately 4.5 inches in the central area. These small radii of curvature provide a much wider field of view than the crossview mirrors previously specified in FMVSS 111, permitting a view of not just the area in front of the bus but also along the side of the bus. Although this wider field of view is gained at the expense of a smaller image size and greater optical distortion, the agency considers the quality of the image to be adequate for its intended purpose. Further, the wider field of view could improve safety by enabling school bus drivers to see children that they could not see with current mirrors.

Therefore, the agency proposed to amend FMVSS 111 to permit the use of mirrors of this type. See 46 FR 60481, December 10, 1981. This proposal would have deleted minimum and maximum radius of curvature requirements and would have permitted the use of any nonuniform mirror surface.

The agency received approximately 50 comments on its proposal, mainly from State boards of education and school bus operators. Most of these commenters supported the use of nonuniform radius mirrors like the Mirror-Lite design, pointing out that the wider field of view provided by such mirrors should promote safety. Several other commenters suggested modifications to the agency's proposal. Based on these comments and the agency's further consideration of the relevant issues, the agency is amending FMVSS 111 to permit the use of mirrors like the Mirror-Lite design, although it is not limited to that design.

The agency received a number of comments regarding radius of curvature requirements. As noted above, FMVSS 111 has provided that crossview mirrors must have a single radius of curvature which must be at least 12 inches but not more than 25 inches. The maximum radius requirement was imposed to assure that the mirror provides an adequate field of view. An overly large radius would provide

an inadequate view since field of view decreases as radius of curvature increases. The minimum radius requirement was imposed to assure adequate image size and quality; as radius of curvature decreases, image size also decreases, and image distortion increases. Thus, the radius of curvature specifications reflect a trade-off between field of view on one hand and image size and accuracy on the other hand. The agency's proposal, in seeking to permit the use of mirrors with radii in the 3.5 inches to 4.5 inches range, deleted all radius of curvature requirements.

Donnelly Mirrors, Inc., pointed out that permitting unlimited variation in a mirror's radius of curvature would permit unacceptable levels of optical distortion. It was not the agency's intention to completely remove restrictions on radius of curvature for crossview mirrors. Rather, it was the agency's desire to permit the use of an additional type of mirror which had been shown to be highly effective. Therefore, this final rule retains the current maximum radius of curvature requirement and establishes a minimum radius requirement consistent with the Mirror-Lite design. Requirements were also established in response to this comment to assure that the mirror surface does not have major, abrupt changes in radius of curvature or other surface discontinuities which could cause excessive optical distortion.

The Grote Manufacturing Company (a mirror producer) and the Truck Safety Equipment Institute argued that the image produced by a mirror with a radius of curvature below 12 inches is too small to be readily identifiable. The agency disagrees. Based on NHTSA's own evaluation of the Mirror-Lite design in actual school bus service, the image provided by the mirror is adequate to tell the bus driver whether a child is in front of the bus or along the side of the bus. The agency was also impressed by the numerous comments received from bus operators who had experience with after market nonuniform radius mirrors, and found them to be superior in actual service to the uniform radius mirror. While it is true that the image provided by the Mirror-Lite mirror is smaller and more distorted than that of a uniform 12-inch radius mirror, the agency believes that the image size and quality for these mirrors is adequate for its intended purpose and that these disadvantages are fully offset by the wider field of view provided by the former. It should be pointed out that this mirror is to be used for a very limited purpose, i.e., to determine whether a child is in close proximity to the front of the school bus or along the side, especially where the child exits from the bus. While a small radius mirror might be inadequate to judge distance and velocity as would be required in an automotive rearview mirror, the agency finds them adequate for their intended purpose, and even superior in terms of providing an additional view of the side of the bus, another potentially dangerous area.

Several commenters suggested imposing performance requirements for the field of view of the crossview mirror, rather than specifying the radius of curvature. While the agency believes this to be a desirable goal, it is beyond the scope of this rulemaking. Specifying the field of view is a complicated task, which the agency is still evaluating in the context of its major rulemaking on rearview mirrors. See 43 FR 51657, November 6, 1978.

Grote also recommended clarifying the requirement that crossview mirrors must have 40 square inches of reflective surface. They suggested that this area requirement should be expressed in terms of the effective projected area of the reflective surface measured on a plane at right angles to the axis of the mirror. Without such clarification, the requirement could be interpreted to refer to surface area, which would vary for a mirror of given diameter, depending on the radius of curvature. The agency agrees and is adopting Grote's suggestion for the newly authorized mirrors.

Several commenters suggested that FMVSS 111 should require the use of two convex crossview mirrors, one mounted on each side of the bus. The current requirement is for only one mirror mounted on either side of the bus, but many school buses employ additional crossview mirrors. The agency believes that the use of additional crossview mirrors on each side of the bus would provide both a better view of the front of the bus and a view of each side of the bus. The side area can be a major concern, particularly on the passenger exit side, since children standing in that area can be hit as the bus pulls away from the stop and makes a turn. However, requiring additional mirrors is a matter beyond the scope of the proposal issued in this rulemaking. The agency will consider requiring more additional mirrors in subsequent rulemaking. In the meantime, school districts are strongly encouraged to use additional mirrors as

necessary to permit the driver to view the areas along the front and both sides of the bus.

The agency has considered the economic and other effects of this action and has determined that the rule is not a major rule within the meaning of Executive Order No. 12291. The agency has further determined that the action is not significant within the meaning of the Department of Transportation's regulatory procedures. The basis for these determinations is that the rule relaxes a design restriction in the current standard. It does not require school buses to be equipped with new mirrors; it merely gives manufacturers the flexibility to use a different type of mirror, whose performance is at least as effective as current mirrors. Accordingly, the agency has not prepared a full regulatory evaluation.

The agency has also considered the effect of this action in relation to the Regulatory Flexibility Act, and I certify that it would not have a significant economic effect on a substantial number of small entities. The effect of the amendment on small businesses is to give manufacturers the option of using new types of mirrors. It does not require any manufacturer to change its current practice.

The action will not have a significant effect on a substantial number of small government jurisdictions and small organizations. Those entities are affected because they are purchasers of school buses. It is unknown how many of them will exercise the voluntary choice of using new types of mirrors, but the cost impact, if any, should be minimal. Accordingly, no regulatory flexibility analysis has been prepared.

This action is being made effective on publication, to permit the immediate use of crossview mirrors which are at least equivalent to current mirrors in safety performance, and may be superior to current mirrors. Since this action "relieves a restriction," the immediate effective date is authorized under 5 U.S.C. 553(d). Since the immediate effective date may well promote safety and the amendment is merely an alternative method of compliance which does not necessarily impose additional costs or other burdens, the immediate effective date is in "the public interest" within the meaning of section 103(e) of the National Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1392(e).

In consideration of the foregoing, section 9.2 of 49 CFR 571.111 is amended to read as follows:

S9.2 *Outside crossview mirror.* Each school bus, except one which is a forward control vehicle, shall have a convex mirror which complies with the requirements in paragraphs (a) and (b) of this section.

(a) The convex mirror shall have a radius of curvature not less than 3.5 inches and not more than 25 inches. A convex mirror whose radius of curvature at its periphery is not less than 12 inches and not more than 25 inches shall have a surface area which is not less than 40 square inches. A convex mirror whose radius of curvature at any point on the mirror is less than 12 inches shall have a projected area of not less than 40 square inches, measured on a plane at a right angle to the mirror's axis. A convex mirror with a nonuniform radius shall comply with the following criteria:

(1) The radius at the periphery of the mirror shall be not less than 75 percent of the radius at the center of the mirror.

(2) Along the intersection of any plane containing the axis of symmetry of the mirror and the surface of the mirror, the length of the radius, as measured by a spherometer, shall be monotonically nonincreasing when moving from the axis of symmetry to the periphery along the intersection.

(3) Along the intersection described in paragraph (a)(2) of this section there shall be no discontinuities in the slope of the surface of the mirror.

(b) The mirror shall be installed with a stable support, and mounted so as to provide the driver a view of the front bumper and the area in front of the bus.

Issued on August 30, 1983.

Diane K. Steed
Deputy Administrator

48 FR 40260
September 6, 1983

MOTOR VEHICLE SAFETY STANDARD NO. 111

Rearview Mirrors

S1. Scope. This standard specifies requirements for the performance and location of rearview mirrors.

S2. Purpose. The purpose of this standard is to reduce the number of deaths and injuries that occur when the driver of a motor vehicle does not have a clear and reasonably unobstructed view to the rear.

S3. Application. This standard applies to passenger cars, multipurpose passenger vehicles, trucks, buses, school buses and motorcycles.

S4. Definition. "Unit magnification mirror" means a plane or flat mirror with a reflective surface through which the angular height and width of the image of an object is equal to the angular height and width of the object when viewed directly at the same distance except for flaws that do not exceed normal manufacturing tolerances. For the purposes of this regulation a prismatic day-night adjustment rearview mirror one of whose positions provides unit magnification is considered a unit magnification mirror.

[“Convex mirror” means a mirror having a curved reflective surface whose shape is the same as that of the exterior surface of a section of a sphere. (47 F.R. 38698—September 2, 1982. Effective: September 2, 1982)]

S5. Requirements for passenger cars.

S5.1. Inside rearview mirror. Each passenger car shall have an inside rearview mirror of unit magnification.

S5.1.1. Field of view. Except as provided in S5.3, the mirror shall provide a field of view with an included horizontal angle measured from the projected eye point of at least 20 degrees, and sufficient vertical angle to provide a view of a level road surface extending to the horizon beginning at a point not greater than 200 feet to the rear of the vehicle when the vehicle is occupied by the driver and four passengers or the designed occupant capacity, if less, based on an average occupant weight of 150 pounds. The line of sight may be partially obscured by seated occupants or by head restraints. The location of the driver's eye reference points shall be those established in Motor Vehicle Safety Standard No. 104 (§ 571.104) or a nominal location appropriate for any 95th percentile male driver.

S5.1.2. Mounting. The mirror mounting shall provide a stable support for the mirror, and shall provide for mirror adjustment by tilting in both the horizontal and vertical directions. If the mirror is in the head impact area, the mounting shall deflect, collapse or break away without leaving sharp edges when the reflective surface of the mirror is subjected to a force of 90 pounds in any forward direction that is not more than 45° from the forward longitudinal direction.

S5.2 Outside rearview mirror—driver's side.

S5.2.1. Field of view. Each passenger car shall have an outside mirror of unit magnification. The mirror shall provide the driver a view of a level road surface extending to the horizon from a line, perpendicular to a longitudinal plane tangent to the driver's side of the vehicle at the widest point, extending 8 feet out from the tangent plane 35 feet behind the driver's eyes, with the seat in the rearmost position. The line of sight may be partially obscured by the rear body or fender contours. The location of the driver's eye reference points shall be those established in Motor Vehicle Safety Standard No. 104 (§ 571.104) or a nominal location appropriate for any 95th percentile male driver.

S5.2.2. Mounting. The mirror mounting shall provide a stable support for the mirror, and neither the mirror nor the mounting shall protrude farther than the widest part of the vehicle

body except to the extent necessary to produce a field of view meeting or exceeding the requirements of S5.2.1. The mirror shall not be obscured by the unwiped portion of the windshield, and shall be adjustable by tilting in both horizontal and vertical directions from the driver's seated position. The mirror and mounting shall be free of sharp points or edges that could contribute to pedestrian injury.

S5.3 Outside rearview mirror passenger's side. Each passenger car whose inside rearview mirror does not meet the field of view requirements of S5.1.1 shall have an outside mirror of unit magnification or a convex mirror installed on the passenger's side. The mirror mounting shall provide a stable support and be free of sharp points or edges that could contribute to pedestrian injury. The mirror need not be capable of adjustment by tilting in both horizontal and vertical directions.

S5.4 Convex mirror requirements. Each motor vehicle using a convex mirror to meet the requirements of S5.3 shall comply with the following requirements:

S5.4.1 When each convex mirror is tested in accordance with the procedures specified in S12 of this standard, none of the radii of curvature readings shall deviate from the average radius of curvature by more than plus or minus 12.5 percent.

S5.4.2 [Each convex mirror shall have permanently and indelibly marked at the lower edge of the mirror's reflective surface, in letters not less than $\frac{3}{16}$ inch or more than $\frac{1}{4}$ inch high, the words "Objects in Mirror Are Closer Than They Appear." (48 F.R. 38842—August 26, 1983. Effective: August 26, 1983)]

S5.4.3 The average radius of curvature of each such mirror, as determined by using the procedure in S12, shall be not less than 35 inches and not more than 65 inches.

S6 Requirements for multipurpose passenger vehicles, trucks, and buses, other than school buses, with GVWR of 10,000 pounds or less.

S6.1 Each multipurpose passenger vehicle, truck and bus, other than a school bus, with a GVWR of 10,000 pounds or less shall have either—

(a) Mirrors that conform to the requirements of S5; or

(b) Outside mirrors of unit magnification, each with not less than 19.5 in^2 of reflective surface, installed with stable supports on both sides of the vehicle, located so as to provide the driver a view to the rear along both sides of the vehicle, and adjustable in both the horizontal and vertical directions to view the rearward scene.

S7. Requirements for multipurpose passenger vehicles and trucks with a GVWR of more than 10,000 and less than 25,000 pounds and buses, other than school buses, with a GVWR of more than 10,000 pounds.

S7.1. Each multipurpose passenger vehicle and trucks with a GVWR of more than 10,000 pounds and less than 25,000 pounds and each bus, other than a school bus, with a GVWR of more than 10,000 pounds shall have outside mirors of unit magnification, each with not less than 50 in^2 of reflective surface, installed with stable supports on both sides of the vehicle. The mirrors shall be located so as to provide the driver a view to the rear along both sides of the vehicle and shall be adjustable both in the horizontal and vertical directions to view the rearward scene.

S8. Requirements for multipurpose passenger vehicles and trucks with a GVWR of 25,000 pounds or more.

S8.1 Each multipurpose passenger vehicle and truck with a GVWR of 25,000 pounds or more shall have outside mirrors of unit magnification, each with not less than 50 in^2 of reflective surface, installed with stable supports on both sides of the vehicle. The mirrors shall be located so as to provide the driver a view to the rear along both sides of the vehicle and shall be adjustable both in the horizontal and vertical directions to view the rearward scene.

S9. Requirements for school buses.

S9.1. Outside rearview mirrors. Each school bus shall have outside mirrors of unit magnification, each with not less than 50 in^2 of reflective surface, installed with stable supports on both sides of the vehicle. The mirrors shall be located so as to provide the driver a view to the rear along both sides of the vehicle and shall be adjustable both in the horizontal and vertical directions to view the rearward scene.

S9.2 Outside cross view mirror. [Each school bus, except one which is a forward control vehicle, shall have a convex mirror which complies with the requirements in paragraphs (a) and (b) of this section.

(a) The convex mirror shall have a radius of curvature not less than 3.5 inches and not more than 25 inches. A convex mirror whose radius of curvature at its persphery is not less than 12 inches and not more than 25 inches shall have a surface area which is not less than 40 square inches. A convex mirror whose radius of curvature at any point on the mirror is less than 12 inches shall have a projected area of not less than 40 square inches, measured on a plane at a right angle to the mirror's axis. A convex mirror with a non-uniform radius shall comply with the following criteria:

(1) The radius at the periphery of the mirror shall be not less than 75 percent of the radius at the center of the mirror.

(2) Along the intersection of any plane containing the axis of symmetry of the mirror and the surface of the mirror, the length of the radius, as measured by a spherometer, shall be monotonically non-increasing when moving from the axis of symmetry to the periphery along the intersection.

(3) Along the intersection described in paragraph (a) (2) of this section there shall be no discontinuities in the slope of the surface of the mirror.

(b) The mirror shall be installed with a stable support, and mounted so as to provide the driver a view of the front bumper and the area in front of the bus. (48 F.R. 40260—September 6, 1983. Effective: September 6, 1983)]

S10. Requirements for motorcycles.

S10.1. Each motorcycle shall have either a mirror of unit magnification with not less than 12.5 in^2 of reflective surface, or a convex mirror with not less than 10 in^2 of reflective surface and an average radius of curvature not less than 20 inches and not greater than 60 inches, installed with a stable support, and mounted so that the horizontal center of the reflective surface is at least 11 inches outward of the longitudinal centerline of the motorcycle. The mirror shall be adjustable by tilting in both the horizontal and vertical directions.

S11. Mirror construction. The average reflectance value of the reflective film employed on any mirror required by this standard, determined in accordance with SAE Recommended Practice J964a, August 1974, shall be at least 35 percent. If a mirror is of the selective position prismatic type, the reflectance value in the night driving position shall be at least 4 percent.

S12 Determination of Radius of Curvature.

S12.1 To determine the average radius of curvature of a convex mirror, use a 3-point linear spherometer, which meets the requirements of S12.2, at the 10 test positions shown in Figure 1 and record the readings for each position.

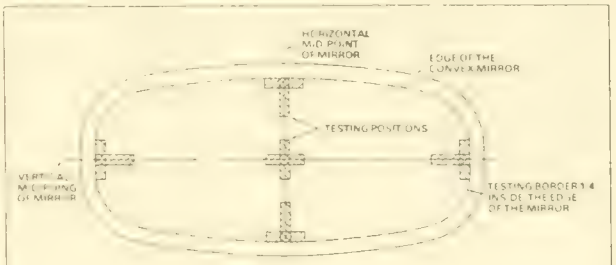


Figure 1 LOCATION OF TEN CONVEX MIRROR TESTING POSITIONS

S12.2 The 3-point linear spherometer has two outer fixed legs 1.5 inches apart and one inner movable leg at the mid-point. The spherometer has a dial indicator with a scale that can be read accurately to 0.0001 inches, with the zero reading being a flat surface.

S12.3 The 10 test positions on the image display consist of two positions at right angles to each other at each of five locations as shown in Figure 1. The locations are at the center of the mirror, at the left and right ends of a horizontal line that bisects the mirror and at the top and bottom ends of a vertical line that bisects the mirror. None of the readings are within 0.25-inch border on the edge of the image display.

S12.4 At each test position, the spherometer is held perpendicular to the convex mirror-surface and a record is made of the reading on the dial indicator to the nearest 0.0001 inch.

S12.5 Convert the dial reading data for each of the 10 test positions to radius of curvature calculations using Table I. Consider the change as linear

for dial readings that fall between two numbers in Table I.

S12.6 Calculate the average radius of curvature by adding all 10 radius of curvature calculations and dividing by ten.

S12.7 Determine the numerical difference between the average radius of curvature and each of the 10 individual radius of curvature calculations determined in S12.5.

S12.8 Calculate the greatest percentage deviation by dividing the greatest numerical difference determined in S12.7 by the average radius of curvature and multiply by 100.

INTERPRETATION

(1) When a supplemental mirror is furnished in addition to the inside rearview mirror and the driver's side outside rearview mirror, the supplemental mirror need not be adjustable from the driver's seat.

(2) The location of the driver's eye reference point may be that established in Motor Vehicle Safety Standard No. 104, or it may be a nominal location appropriate for any 95th percentile male driver.

(3) The horizontal angle is measured from the projected eye point, rather than the plane of the mirror.

32 F.R. 2413
February 3, 1967

TABLE I.—*Conversion Table From Spherometer Dial Reading To Radius of Curvature*

Dial reading	*Radius of curvature (in inches)*	*Dial reading*	*Radius of curvature (in inches)*
.00330	85.2	.00980	28.7
.00350	80.4	.01004	28.0
.00374	75.2	.01022	27.5
.00402	70.0	.01042	27.0
.00416	67.6	.01060	26.5
.00432	65.1	.01080	26.0
.00450	62.5	.01110	25.3
.00468	60.1	.01130	24.9
.00476	59.1	.01170	24.0
.00484	58.1	.01200	23.4
.00492	57.2	.01240	22.7
.00502	56.0	.01280	22.0
.00512	54.9	.01310	21.5
.00522	53.9	.01360	20.7
.00536	52.5	.01400	20.1
.00544	51.7	.01430	19.7
.00554	50.8	.01480	19.0
.00566	49.7	.01540	18.3
.00580	48.5	.01570	17.9
.00592	47.5	.01610	17.5
.00606	46.4	.01650	17.1
.00622	45.2	.01700	16.6
.00636	44.2	.01750	16.1
.00654	43.0	.01800	15.6
.00668	42.1	.01860	15.1
.00686	41.0	.01910	14.7
.00694	40.5	.01980	14.2
.00720	39.1	.02040	13.8
.00740	38.0	.02100	13.4
.00760	37.0	.02160	13.0
.00780	36.1	.02250	12.5
.00802	35.1	.02340	12.0
.00822	34.2	.02450	11.5
.00850	33.1	.02560	11.0
.00878	32.0	.02680	10.5
.00906	31.0	.02810	10.0
.00922	30.5	.02960	9.5
.00939	30.0	.03130	9.0
.00960	29.3	.03310	8.5

PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO 112

Headlamp Concealment Devices—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, Buses, and Motorcycles

(Docket No. 1–16)

A proposal to amend Part 371 by adding Federal motor vehicle safety standard No. 112, Headlamp Concealment Devices—Passenger Cars, Multipurpose Passenger Cars, Multipurpose Passenger Vehicles, Trucks, Buses, and Motorcycles, was published as an advance notice of proposed rule making on October 14, 1967 (32 F.R. 14280) and as a notice of proposed rule making on December 28, 1967 (32 F.R. 20865).

Interested persons have been given the opportunity to participate in the making of this amendment, and careful consideration has been given to all relevant matter presented.

Inadvertent actuation of a headlamp concealment devices, due to a defective condition thereby causing headlamps to be blacked out, has compromised the safety of occupants of the vehicle concerned and other highway users. There have been reports of several accidents and incidents caused by such inadvertent blacking out of headlamps. In addition, the Administrator considers headlamp concealment devices present a continuing hazard to motor vehicle safety in that they may inadvertently black out headlamps while headlamps are in use. This standard requires that fully opened headlamp concealment devices must remain fully opened whenever there is a loss of power to or within the device and whenever any malfunction occurs in components that control or conduct power for the operation of a concealment device. These requirements provide a fail-safe operation which serves to prevent further incidents of inadvertent blacking out of headlamps by headlamp concealment devices.

In addition, other safety performance criteria are established. Thus, whenever any malfunction occurs in components that control or conduct power for the actuation of the concealment device, additional means for fully opening each headlamp concealment device must be provided. A single mechanism must be provided for actuating the headlamp concealment device and illuminating the lights. The installation of each headlamp concealment device must be such that no component of the device, other than components of the headlamp assembly, need be removed when mounting, aiming and adjusting the headlamps. Headlamp beams that illuminate during opening and closing of the headlamp concealment device may not project to the left of or above the position of the beam in the fully opened position. Finally, within the temperature ranges specified, headlamp concealment devices must be fully opened in three seconds after actuation of the appropriate mechanism, except in the event of a power loss. These additional performance criteria meet the needs of motor vehicle safety by increasing the safe and reliable operation of headlamp concealment devices.

Several comments stated that a requirement for fail-safe operation under any combination of unforeseeable circumstances is unreasonable. The requirements expressed in S4.1 are not intended to impose responsibility for failures caused by abuse, poor maintenance practices or other conditions not encompassed by S4.1. Whether or not failure of a headlamp concealment device to remain in an open position once fully opened is a violation of the standard would, of course, depend upon whether the device failed under the conditions encompassed by the standard. Some comments requested that the conditions expressed in S4.1 be made test conditions and one commentator submitted a suggested test procedure to demonstrate compliance. Because of the wide variety of designs and types of

headlamp concealment devices currently in use, no single demonstration procedure is appropriate for all. Consequently, prescription of a standard demonstration procedure is neither practicable nor feasible under the circumstances. The Administrator concludes that the needs of motor safety require that headlamp concealment devices be fail-safe. The Administrator further concludes that the most appropriate method of meeting those needs and of preventing further hazard from obstructed headlamps caused by headlamp concealment device failures is by the prescription of fail-safe operational criteria, as specified in S4.1. Accordingly, the requests are denied.

A number of comments stated that the 3-second operating time requirement and the aiming requirements for rotating headlamps would impose unreasonable burdens in retooling and redesigning if the January 1, 1969, effective date is to be met. Based upon the data presented, the Administrator agrees with these comments. Accordingly, S4.5 and S4.6 are made effective January 1, 1970.

Several comments recommended additional provisions expressly permitting headlamp concealment devices that are automatically actuated by light sensing mechanisms. This standard is not intended to prevent the use of light sensing mechanisms. Consequently, language has been added to clarify this intention if the light sensing mechanism meets the same operational requirements prescribed for switch operated headlamp concealment devices.

Several comments requested inclusion of a provision in S4.3 permitting an additional separate control that actuates only the headlamp concealment device. The Administrator considers permitting this additional control would not be in the best interests of motor vehicle safety. The requests are, therefore, denied.

Other comments suggested that rotating headlamps be required to return to the correctly aimed position after a specified minimum number of opening and closing cycles that power be provided for at least one opening cycle after the vehicle engine has been stopped for a specified length of time; that a warning device be required to indicate to the driver that the concealment devices are malfunctioning; that requirements for aiming and adjusting of headlamps be expanded to insure that vehicle body structure and lamp ornaments will not interfere with these operations; that the standard prohibit designs which permit snow and ice to accumulate over the sealed beam headlamp units; that requirements be included to assure capability for opening concealment devices that are frozen shut; and that a standard be established to prohibit the use of headlamp concealment devices. Although some of these suggestions appear to have merit, they are all beyond the scope of the notice and will, therefore, be considered for future rule making action.

In consideration of the foregoing, § 371.21 of Part 371 of the Federal motor vehicle safety standards is amended by adding Standard No. 112, Headlamp Concealment Devices—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, Buses, and Motorcycles . . . effective January 1, 1969.

This rule-making action is taken under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (Public Law 89–563, 15 U.S.C. sections 1392 and 1407) and the delegation of authority of April 24, 1968.

Issued in Washington, D.C., on April 24, 1968.

Lowell K. Bridwell,
Federal Highway Administrator

33 F.R. 6469
April 27, 1968

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD 112

Headlamp Concealment Devices—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, Buses and Motorcycles

Motor Vehicle Safety Standard No. 112, published in the *Federal Register* on April 27, 1968 (33 F.R. 6469), specifies requirements for headlamp concealment devices for passenger cars, multipurpose passenger vehicle, trucks, buses and motorcycles manufactured after December 31, 1968.

Paragraph S4.1 requires that each fully opened headlamp concealment device remain fully opened whenever either or both of the following occur—

a. Any loss of power to or within the headlamp concealment device;

b. Any disconnection, restriction, short-circuit, circuit time delay, or other similar malfunction in any wiring, tubing, hose, solenoid or other component that controls or conducts power for operating the concealment device.

The purpose of S4.1 is to prevent a malfunctioning headlamp concealment device from inadvertently covering an illuminated headlamp. However, the Administrator has concluded that this paragraph may be construed to prohibit the closing of headlamp concealment devices while the headlamps are not illuminated. Consequently, paragraph S4.1 is being amended to clarify that its requirements apply only while the headlamps are illuminated.

Since this amendment provides clarification and imposes no additional burden on any person, notice and public procedure hereon are unnecessary. It is therefore found, for good cause shown, that an effective date earlier than 180 days after issuance is in the public interest and in the interest of motor vehicle safety.

In consideration of the foregoing, § 371.21 of Part 371, Federal Motor Vehicle Safety Standards, Motor Vehicle Safety Standard No. 112 (33 F.R. 6469), paragraph S4.1 is amended effective January 25, 1969....

This amendment is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and pursuant to the delegation of authority from the Secretary of Transportation, Part 1 of the regulations of the Office of the Secretary (49 CFR 1.4(c)).

Issued on January 22, 1969.

John R. Jamieson, Deputy
Federal Highway Administrator

34 F.R. 1246
January 25, 1969

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 112

Headlamp Concealment Devices (Docket No. 87-03; Notice 2)

ACTION: Final Rule.

SUMMARY: This notice amends Motor Vehicle Safety Standard No. 112, in response to Chrysler Corporation's petition for rulemaking. The amendment deletes the requirement that during the opening of a concealed headlamp the headlamp beam may not project to the left of or above the position of the beam when the concealed headlamp device is fully open.

DATES: Effective date October 23, 1987.

SUPPLEMENTARY INFORMATION: Paragraph S4.5 of Safety Standard No. 112, *Headlamp Concealment Devices* states that "After December 31, 1969, the headlamp beam of headlamps that illuminate during opening and closing of the headlamp concealment device may not project to the left of or above the position of the beam when the device is fully opened." In the view of Chrysler Corporation, this requirement imposes a design restriction on those types of rotating headlamp systems "which, although they project a beam of light very slightly to the left during opening and closing do so at a point in their travel that does not produce glare in the eyes of oncoming drivers."

Chrysler specifically references its 1987 Dodge Daytona model which is equipped with a retracting headlamp system. In order to adapt the system to the car's front end sheet metal, it was necessary to design the system so that in opening and closing it moves through "a laterally outboard 7 mm truncated arc." As a result, the right headlamp momentarily projects a beam of light to the left of center, which, however, is not above the position of the beam when the device is fully opened. Chrysler can meet the requirement through "incorporating a complex and costly electronic switching system to illuminate the headlamps only when they are fully opened and to turn out the light during opening and closing." Because it does not believe that the low candela of the lamp during its arc are sufficient to cause glare, Chrysler petitioned for rulemaking to amend paragraph S4.5 to establish an exception to the prohibition of beam projection to the left. The exception would be "when the maximum allowable photometric values at the points at or above V = 0.5 (glare test points) are not exceeded during any portion of the headlamp's travel." That exception, if adopted, would allow light intensities permitted by Standard No. 108, rather than limit the glare intensity to that achieved by the specific lamp under present positional constraints.

In the agency's opinion, however, Chrysler's proposed amendment is problematic. Regardless of the motion of the beam during movement to the final position of the lamp, headlamp beams do not uniformly decrease in intensity from their hot spots (i.e., brightest part of beam) radially outward. Because small higher intensity areas can randomly occur in larger areas of lower intensity, any concealed headlamp could produce higher intensities at various test points during its travel than when fully open. Therefore, even concealed headlamps whose motion complies with Standard No. 112 could become noncompliant with a procedure that uses performance relative to the photometry in Standard No. 108 as the criterion.

The safety problem that paragraph S4.5 is intended to address is the effect of transitory glare upon drivers of other motor vehicles. The agency believes that such effects are minimal in comparison with the incidence of transitory glare that motorists already experience, such as created by oncoming upper beams, or by lower beams during changes in vehicle position (rounding corners) or attitude (coming over the brow of a hill). Although undue glare in any form is undesirable, and manufacturers should design their headlighting systems so that glare in any form is reduced, the agency has concluded that S4.5 represents a design restriction that is not required to serve the interests of motor vehicle safety.

Therefore, on February 27, 1987, the agency proposed the deletion of S4.5, and proposed that S4.6 be renumbered, and that reference to its effective date ("after December 31, 1969") be removed. (52 FR 5975)

Nine comments were received on the proposal. Seven of the commenters supported it. The States of California and Minnesota did not support deletion of the requirement but favored retaining it in a

more performance oriented form. In Minnesota's opinion, even though the transient effect may be minimal, there was nothing to prevent the beam from remaining in a left and up position should there be a malfunction of the concealment device during the transition from closed to open, or vice versa. Such a failure could cause significant glare to other drivers until the malfunction was corrected. The agency considered Minnesota's argument a plausible one. However, NHTSA's Office of Defects Investigation reported that its files from June 1981 to date contained no complaints about a malfunction in which a device failed in a semi-open position. Of the 15 complaints received, 8 reported failure to open, and 4 a failure to close from the fully open position. Therefore the problem presented by the Minnesota comment appeared theoretical rather than actual, and NHTSA is amending Standard No. 112 as proposed.

In consideration of the foregoing, 49 CFR Part 571 and 571.112, Motor Vehicle Safety Standard No. 112, *Headlamp Concealment Devices*, are amended as follows:

Paragraph S4.5 of § 571.112 is removed.

Paragraph S4.6 of § 571.112 is redesignated S4.5 and the phrase "after December 31, 1969" is removed.

Issued on: September 17, 1987

Diane K. Steed
Administrator

52 F.R. 35709
September 23, 1987

MOTOR VEHICLE SAFETY STANDARD NO. 112

Headlamp Concealment Devices—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, Buses and Motorcycles

S1. Scope. This standard specifies requirements for headlamp concealment devices.

S2. Application. This standard applies to passenger cars, multipurpose passenger vehicles, trucks, buses, and motorcycles.

S3. Definitions. "Fully opened" means the position of the headlamp concealment device in which the headlamp is in the design open operating position.

"Headlamp concealment device" means a device, with its operating system and components, that provides concealment of the headlamp when it is not in use, including a movable headlamp cover and a headlamp that displaces for concealment purposes.

"Power" means any source of energy that operates the headlamp concealment device.

S4. Requirements.

S4.1 While the headlamp is illuminated, its fully opened headlamp concealment device shall remain fully opened whenever either or both of the following occur—

(a) Any loss of power to or within the headlamp concealment device;

(b) Any disconnection, restriction, short-circuit, circuit time delay, or other similar malfunction in any wiring, tubing, hose, solenoid or other component that controls or conducts power for operating the concealment device,

S4.2 Whenever any malfunction occurs in a component that controls or conducts power for the actuation of the concealment device, each closed headlamp concealment device shall be capable of being fully opened—

(a) By automatic means;

(b) By actuation of a switch, lever or other similar mechanism; or

(c) By other means not requiring the use of any tools. Thereafter, the headlamp concealment device must remain fully opened until intentionally closed.

S4.3 Except for cases of malfunction covered by S4.2, each headlamp concealment device shall be capable of being fully opened and the headlamps illuminated by actuation of a single switch, lever, or similar mechanism, including a mechanism that is automatically actuated by a change in ambient light conditions.

S4.4 Each headlamp concealment device shall be installed so that the headlamp may be mounted, aimed, and adjusted without removing any component of the device, other than components of the headlamp assembly.

[S4.5] Except for cases of malfunction covered by S4.2, 1969, each headlamp concealment device shall, within an ambient temperature range of −20 to +120 degrees F., be capable of being fully opened in not more than three seconds after actuation of the mechanism described in S4.3. **(52 FR 35709—September 23, 1987.—Effective: October 23, 1987)**

34 F.R. 1246
January 25, 1969

PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 113

Hood Latch Systems—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses (Docket No. 1–17)

A proposal to amend Part 371 by adding Federal motor vehicle safety Standard No. 113, Hood Latch Systems—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses, was published as an advance notice of proposed rule making on October 14, 1967 (32 F.R. 14280), and as a notice of proposed rule making on December 28, 1967 (32 F.R. 20866).

Interested persons have been given the opportunity to participate in the making of this amendment, and careful consideration has been given to all relevant matter presented.

This new standard requires that all motor vehicles to which it is applicable be equipped with a hood latch system. Additionally, in those instances where a vehicle is equipped with a front opening hood, which in any open position partially or completely obstructs a driver's forward view through the windshield, a second latch position on the hood latch system or a second hood latch system must be provided.

Available data reveals that inadvertent hood openings pose a serious hazard to the safe operation of motor vehicles, particularly in the case of front opening hoods. By requiring a hood latch system for all hoods, and under certain circumstances, a second position on that system or an independent second system, this standard will help to reduce incidents of inadvertent hood openings.

All the comments support the need for a hood latch system or hood latch systems, as the case may be. Several commentators requested inclusion of a definition of "hood" and "front opening hood." The Administrator agrees that "hood" should be defined and has defined it as any exterior movable body panel forward of the windshield used to cover an engine, luggage, storage, or battery compartment. However, the Administration concludes that a definition of "front opening hood" is unnecessary; that phrase is sufficiently definite and is clearly distinguishable from a "side opening" or "rear opening" hood.

Several commentators conditioned their support upon the understanding that the requirement for front opening hoods could be met by a single latch system with two positions, by two separate primary latch systems, or separate primary and secondary latches. Language changes have been made to S4.2 to clarify that all of these types of installations are acceptable.

Several commentators expressed concern over the lack of quantitative performance criteria for hood latch systems. The Administrator finds that additional research and study are necessary before meaningful quantitative performance criteria can be appropriately specified.

In consideration of the foregoing, § 371.21 of Part 371 of the Federal motor vehicle safety standards is amended by adding Standard No. 113, Hood Latch Systems—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses ... effective January 1, 1969.

This rule making action is taken under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (Public Law 89–563, 15 U.S.C. sections 1392 and 1407), and the delegation of authority of April 24, 1968.

Issued in Washington, D.C., on April 24, 1968.

Lowell K. Bridwell,
Federal Highway Administrator

33 F.R. 6470
April 27, 1968

MOTOR VEHICLE SAFETY STANDARD NO. 113

Hood Latch Systems—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses

S1. Purpose and scope. This standard establishes the requirement for providing a hood latch system or hood latch systems.

S2. Application. This standard applies to passenger cars, multipurpose passenger vehicles, trucks and buses.

S3. Definitions. "Hood" means any exterior movable body panel forward of the windshield that is used to cover an engine, luggage, storage, or battery compartment.

S4. Requirements.

S4.1 Each hood must be provided with a hood latch system.

S4.2 A front opening hood which, in any open position, partially or completely obstructs a driver's forward view through the windshield must be provided with a second latch position on the hood latch system or with a second hood latch system.

33 F.R. 6471
April 27, 1968

PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 114

Theft Protection—Passenger Cars

(Docket No. 1–21)

A proposal to amend § 371.21 of Part 371, Federal Motor Vehicle Safety Standards by adding a new standard, Theft Protection—Passenger Cars, was published in the *Federal Register* on December 28, 1967 (32 F.R. 20866).

Interested persons have been afforded an opportunity to participate in the making of the standard. Their comments and other available information have been carefully considered.

Responses to the notice and other information have demonstrated that stolen cars constitute a major hazard to life and limb on the highways. The evidence shows that cars operated by unauthorized persons are far more likely to cause unreasonable risk of accident, personal injury, and death than those which are driven by authorized individuals. Further, the incidence of theft, and hence the risk of accidents attributable thereto, is increasing. According to a recent study by the Department of Justice there were an estimated 94,000 stolen cars involved in accidents in 1966, and more than 18,000 of these accidents resulted in injury to one or more people. On a proportionate basis, 18.2 percent of the stolen cars became involved in accidents, and 19.6 percent of the stolen-car accidents resulted in personal injury. The same study predicted that automobile thefts in 1967 total about 650,000; about 100,000 of these stolen cars could be expected to become involved in highway accidents. Comparing these figures with statistics for vehicles which are not stolen, the approximate rate for stolen cars would be some 200 times the normal accident rate for other vehicles. Thus, a reduction in the incidence of auto theft would make a substantial contribution to motor vehicle safety. It would not only reduce the number of injuries and deaths among those who steal cars, it would also protect the many innocent members of the public who are killed and injured by stolen cars each year.

The President's Commission on Law Enforcement and Administration of Justice, in its report "The Challenge of Crime in a Free Society," noted the rising cost in lives and dollars as a result of auto theft, highlighted the need for measures to reduce auto thefts and suggested that "The responsibility could well be assigned to the National Highway Safety Agency as part of its program to establish safety standards for automobiles." (pp. 260–261).

The Administrator has concluded that a standard that would reduce the incidence of unauthorized use of cars meets the needs for motor vehicle safety. Consequently, he rejects those comments on the proposed standard which questioned its validity on the ground that it is not related to improving motor vehicle safety. As indicated below, amateur car thieves make up the majority of those unauthorized drivers who become involved in motor vehicle accidents. Many of these thieves make use of keys left in the ignition locks to start the cars they steal. Hence, the standard requires each car to be equipped with a device to remind drivers to remove the key when leaving the car. The number of car thieves who start cars with so-called "master keys" and devices which bypass the lock is also large enough to produce a significant safety hazard. Therefore, the standard also requires devices which tend to defeat this category of thief: A large number of locking-system combinations and a steering or self-mobility lock.

Several comments urged that the warning-device requirement be eliminated from the standard upon the ground that the removal of the key is the driver's responsibility. It was also said that, since any locking system, no matter how

it is constructed, can be defeated by persons possessing sufficient skill, equipment, and tenacity, provisions for ensuring removal of ignition keys would be futile because a thief need not make use of a key.

As the Department of Justice survey mentioned above demonstrates, however, the large majority of car thieves are amateurs, almost half of whom are engaged in so-called "joyriding." The evidence shows that a high proportion of these thieves, most of whom are juveniles, start the cars' engines simply by using the key which has been left in the ignition lock. It is, of course, the operator's responsibility to remove the key when the car is left unattended and drivers should continue to be exhorted or required to take this elementary precaution. Nevertheless, many do not, and the interest of safety would be promoted by the existence of a visible or audible warning device on the car, reminding the driver when he has neglected his responsibility. This is an instance in which engineering of vehicles is more likely to have an immediate beneficial impact than a long-range process of mass education.

The requirement of a warning when the key is left in the lock was also the subject of several comments which asked that the warning be required when the front-seat passenger's door, as well as the driver's door, is opened. There is considerable validity in the contention that the device should operate upon the opening of either door, particularly because, in some jurisdictions, exiting from a car on the left side is prohibited in certain circumstances. However, the notice of proposed rule making stated that the standard under consideration made the warning-device requirement applicable only when the driver's door is opened. Information available to the Administrator shows that development of such warning devices has concentrated on warnings that are activated only in the event the driver's door is opened while the key remains in the lock. To extend this requirement to the opening of either door might necessitate both the initiation of new rulemaking proceedings and an extension of the standard's effective date. For these reasons, the requirement is, with minor exceptions discussed below, in substance unchanged from the one which appeared in the notice of proposed rulemaking. Extension of the requirement to passenger-door warning devices will be kept under consideration.

The January 1, 1970, effective date also remains unchanged. Most of the comments which focused on the proposed effective date stated that the standard could be complied with by that date. One manufacturer sought a 1-year extension on the ground that it could not produce a steering or mobility lock in sufficient time to equip its automobiles with such a device by January 1, 1970. Although this comment alleged that data in the possession of its author showed that the cost of purchasing and installing a device to comply with the standard would impose an unreasonable economic burden, neither those data nor the basis for the company's conclusion have been supplied to the Administration. In short, nothing supported the request except the broad generalization that the proposed effective date would cause some undefined hardship. Balancing this unsubstantiated generalization against the increase in deaths and injuries that postponing the effective date for a year would probably cause, the Administrator has concluded that a change in the effective date to January 1, 1971, would not be in the interest of safety, that the January 1, 1970, effective date is a practicable one, and that the request to extend it for 1 year is denied.

Many persons who responded to the notice asked that specific theft protection devices be prescribed. These specific devices included brake locks and so-called "pop-out" keys which automatically eject from the locking system, to devices which purportedly make by-passing the ignition switch impossible. The Administrator concludes that it would be unwise to establish a standard in terms so restrictive as to discourage technological innovation in the field of theft inhibition. Consequently, the standard has been framed to permit as many specific devices as possible to meet its requirements. In addition, the standard does not preclude the use of supplementary theft protection measures, such as the "pop-out" key, so long as automobiles comply with the standard's minimum requirement.

In drafting the standard, a number of revisions were made in the language employed in the notice of proposed rulemaking. Many of

these revisions clarify definitional problems that were raised in responses to the notice. The term "key" is defined so as to include methods of activating the locking system other than the commonly accepted concept of a key. The term "combination" was defined to clarify its meaning, and the 1,000-combinations requirement has been changed to make it clear that, after the standard's effective date, each manufacturer must produce at least 1,000 different locking system combinations, unless he manufactures less than 1,000 passenger cars. In response to comments which pointed out the impossibility of constructing a system which, upon removal of the key, would prevent operation of the powerplant absolutely and in all events, the provisions of paragraph S3(a) of the notice were revised to require only that removal of the key must prevent normal activation of the powerplant. Paragraph S4.2 represents a clarification of the requirement contained in paragraph S3.3 of the notice. It is intended to permit the driver of a car to turn off the engine in emergency situations while the car is in motion without also activating the steering or self-mobility lock. Other minor changes were made for amplification or clarification.

Shortly after the issuance of this standard, the Administrator will issue a notice of proposed rulemaking to determine the practicability of improving the standard by adding a requirement that key locking systems be designed and constructed to preclude accidental or inadvertent activation of the deterrent required by S4.1(b) while the car is in motion. The notice will propose an effective date for the additional requirement identical to that of the present standard: January 1, 1970.

In consideration of the foregoing, § 371.21 of Part 371, Federal Motor Vehicle Safety Standards, is amended by adding Standard No. 114, . . . , effective January 1, 1970.

In accordance with section 103(c) of the National Traffic and Motor Vehicle Safety Act of 1966, I find that it would be impractical to require compliance with this standard within 1 year and therefore it is in the public interest to adopt a later effective date.

This amendment is made under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority of April 24, 1968.

Issued in Washington, D.C., on April 24, 1968.

Lowell K. Bridwell,
Federal Highway Administrator

33 F.R. 6471
April 27, 1968

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 114

Theft Protection—Passenger Cars

(Docket No. 1–21)

The Administrator is amending Motor Vehicle Safety Standard No. 114, Theft Protection—Passenger Cars, for the purpose of making several clarifying changes to it. The standard was issued on April 24, 1968 (33 F.R. 6471) and becomes effective on January 1, 1970. After the standard was issued, the Administrator received a number of requests for interpretations or clarifying amendments. While each of the requests discussed below could have been disposed of by interpretation of the present standard, the Administrator has chosen to change the text of the standard in order to ensure that it is clear on its face.

Paragraph S4.1(b) of the standard, as adopted, requires each passenger car to have a key locking system that, with the key removed, will prevent "either steering or self-mobility of the car or both." Several persons pointed out that a literal interpretation of this provision would require a manufacturer who seeks to comply with the self-mobility requirement to install a system that prevents both forward and rearward self-mobility. In view of the improbability of a successful theft of a car capable only of rearward self-mobility, the Administrator agrees that such a literal interpretation would not be consistent with the general purpose of the standard. Therefore, paragraph S4.1(b) is being clarified by inserting the word "forward" before the word "self-mobility".

Several persons sought clarification of paragraph S4.4, which requires activation of a warning to the driver whenever the key has been left in the locking system and the driver's door is opened. The purpose of this provision is to prevent, as far as possible, drivers from inadvertently leaving the key in the ignition lock when the car is unoccupied. As stated in the preamble to the standard when it was adopted, "the standard requires each car to be equipped with a device to *remind* drivers to remove the key when leaving the car" (emphasis added).

It was pointed out that a literal reading of the phrase "left *in* the locking system" (emphasis added) would require activation of the warning regardless of the extent to which the key is inserted in the lock, even if the driver deliberately chooses to withdraw it partially from the lock. These comments argued that it was practically impossible to design a warning system that would function if, for example, the key is so far removed as to be dangling from the locking mechanism. It was the purpose of this provision to require activation of the warning device whenever the key is left in the lock in a position from which the lock can be turned. Once the driver has withdrawn the key beyond the position, he is presumably aware of the location of the key, and no warning need be given to him. Paragraph S4.4 is being amended to clarify this intent.

Paragraph S4.4 is also being amended to avoid the possibility of an interpretation that would prohibit use of a type of locking system and steering lock that has, in the past, been a successful deterrent against theft. In this system, the warning to the driver works in conjunction with the activation of the steering lock device. The steering lock is not activated when the key, after having been withdrawn from the ignition lock, is simply reinserted in the locking system. Nor is the warning to the driver actuated until the key is turned so that the steering lock is deactivated. As noted above, the purpose of paragraph S4.4 is not to guarantee that drivers will remove the key upon leaving the car; rather, it seeks to ensure that drivers do not inadvertently leave their keys in ignition locks. In all but a very small

number of cases, a driver who has withdrawn and then reinserted the key cannot be said to have inadvertently left it in the locking system when he thereafter exits from the car. Therefore, paragraph S4.4 is being amended to make it clear that the warning device need not operate after the key has been removed and reinserted in the locking system without turning the key.

Finally, several persons pointed out that the language of paragraph S4.4 would require activation of the warning device even if the locking system is in the "on" or "start" position. A positive physical act is usually required to bring the system to the "on" position or the "start" position. Moreover, a forgetful driver would not normally leave the key in the "on" position if he opened his door with the intent of leaving the car unattended. In most cases, it is impossible for him to leave the key in the "start" position without physically holding it in that position. Hence, no valid purpose would be served by requiring the warning to be activated when the locking system is in either of those positions, and the standard is being amended to omit any implication that such a requirement is imposed.

Since these changes are clarifying and interpretive in nature, and since they impose no additional burden on any person, I find that notice and public procedure thereon is unnecessary.

In consideration of the foregoing, section 371.21 of Part 371, Federal Motor Vehicle Safety Standards, Motor Vehicle Safety Standard No. 114 (33 F.R. 6741) is amended, effective January 1, 1970, as set forth below.

(Secs. 103 and 119, National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority at 49 C.F.R. 1.4(c))

Issued on June 9, 1969.

F. C. Turner
Federal Highway Administrator

June 13, 1969
34 F.R. 9342

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 114

Theft Protection—Passenger Cars

(Docket No. 1–21)

Driver-Warning Requirement—Denial of Petition for Amendment; Extension of Effective Date

General Motors Corporation has filed a petition for amendment of paragraph S4.4 of Motor Vehicle Safety Standard No. 114. That paragraph requires each passenger car manufactured after December 31, 1969 to have a warning to a driver who neglects to remove his key from the ignition lock before he leaves the car. As amended (34 F.R. 9342), the standard provides that the warning need not operate "after the key has been manually withdrawn to a position from which it may not be turned."

The basis of the petition is that, in the current-model General Motors system, manufacturing tolerances may be such as to permit a driver to manipulate the ignition key into a position at which the warning buzzer will be deactivated while the ignition lock remains operative. General Motors seeks an amendment to permit the warning to be inoperative "after the key has been manually withdrawn from the normal operating position."

Upon consideration of the petition and other evidence, the Administrator has concluded that it would not be in the public interest to grant the relief General Motors has requested. The purpose of paragraph S4.4 is to make it virtually impossible for a driver inadvertently to leave his key in the ignition lock when he exits and thereby to reduce car thefts along with the high potential for accidental injury and death that stolen cars have. If it were possible for a driver to manipulate the key so as to render the warning inoperative while, at the same time, to continue to operate the vehicle with the key in the lock, the salutary purpose of the warning requirement would be defeated. Therefore, the petition for amendment is denied.

However, the Administrator recognizes that the tolerance problem General Motors has raised is a genuine one. It may be related to the fact that General Motors attempted, in good faith, to manufacture cars that complied with Standard No. 114 well before the standard's effective date. This is a laudable action for which General Motors should not be penalized. Furthermore, the Administrator realizes that the General Motors system is installed not only on its own productoin but also in passengers car produced by other high-volume manufacturers.

Therefore, the Administrator has concluded that the effective date of paragraph S4.4 of Standard No. 114 should be extended to allow additional time to overcome the tolerance problem. According to the best information available at this time, it appears that a 90-day extension of the January 1, 1970 effective date will provide sufficient time for redesigning and retooling the General Motors system so that it fully conforms to the standard's requirements and to put the new system into production. This conclusion is based on the expectation that the problems involved will be attacked on an urgent, high priority basis, as they should be in view of the safety need that paragraph S4.4 meets. The Administrator may consider a further extension at a later date if additional evidence to justify such an extension is adduced at that time.

Because of the shortness of time before the effective date of Standard No. 114 and because extension of that effective date for compliance with paragraph S4.4 of the standard will impose no additional burden on any person, notice and public procedure hereon are found to be unnecessary and impracticable.

In consideration of the foregoing, the effective date of paragraph S4.4 of Motor Vehicle Safety

Standard No. 114, in § 371.21 of Part 371 is extended to April 1, 1970.

(Secs. 103 and 119, National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority at 49 CFR 1.4(c)).

Issued on December 3, 1969.

F. C. Turner
Federal Highway Administrator

34 F.R. 19547
December 11, 1969

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO.114

Theft Protection
(Docket No. 1-21; Notice 3)

ACTION: Final rule.

SUMMARY: This notice extends the performance requirements of Standard No. 114, Theft Protection, to light trucks and vans. At present, the standard only applies to passenger cars. The effect of the extension will be to reduce the incidence of light truck and van thefts and subsequent disproportionate involvement of those stolen vehicles in injury-producing accidents. The notice also upgrades the performance requirements of the standard to prevent the driver from inadvertently locking up the steering wheel of a moving vehicle by removing the ignition key or shutting off the engine.

DATES: The effective date for passenger cars is September 1, 1982. The final rule is effective for multipurpose passenger vehicles and trucks having a gross vehicle weight rating of 10,000 pounds or less on September 1, 1983.

ADDRESSES: Petitions for reconsideration should refer to the docket number and be submitted to: Docket Section, Room 5108, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590 (Docket hours: 8:00 a.m. to 4:00 p.m.).

FOR FURTHER INFORMATION CONTACT:

Nelson Erickson, Office of Vehicle Safety Standards, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590 (202-426-2720)

SUPPLEMENTARY INFORMATION: On May 1, 1978, the NHTSA published a notice of proposed rulemaking to extend the applicability of Standard No. 114, Theft Protection (49 CFR 571.114), to trucks with a gross vehicle weight rating (GVWR) of 10,000 pounds or less and all multipurpose passenger vehicles (43 FR 18577). The standard currently only applies to passenger cars. The proposal would have also upgraded some of the performance requirements of the standard and clarified others.

Consumers, safety organizations, insurance companies, police departments, locksmiths, vehicle manufacturers, and others submitted comments on the proposed standard. The final rule is based on a thorough evaluation of the data obtained in NHTSA research, data and views submitted in the comments and data obtained from other pertinent documents and reports. The most significant comments are discussed below.

Extending the Applicability

In recent years, the sale and use of light trucks and multipurpose passenger vehicles (MPV's), such as passenger vans and on-off road vehicles, has substantially increased. The rise in sales and use has been accompanied by an increase in the number of thefts of those vehicles. To reduce the incidence of light truck and MPV thefts and subsequent disproportionate involvement of those stolen vehicles in injury-producing accidents, the May 1978 notice proposed extending the requirements of Standard No. 114 to light trucks and MPV's. The extension was supported by such organizations as Allstate Insurance Company, American Automobile Association (AAA), Center for Auto Safety (CAS) and Chrysler Corporation. Several other motor vehicle manufacturers and the Motor Vehicle Manufacturers Association did not oppose the extension of the standard, but did object to some of the newly-proposed performance requirements. GM said that while more data were needed to justify the extension, it had voluntarily applied some anti-theft features to some of its light trucks and was

considering using theft protection equipment on all its light trucks and vans. American Motors Corporation (AMC) also argued that a safety need had not been established. AMC and others also requested that if the extension were adopted, then open-body vehicles, such as some on-off road vehicles, should be exempt from the standard.

The agency is adopting the extension as proposed. The data cited by the agency in the May 1978 notice clearly establish that there is a safety need for reducing the number of motor vehicle thefts. That data showed that stolen cars are from 47 to 200 times more likely than non-stolen cars to be involved in accidents. Stolen cars are involved in one out of every 350 accidents and account for approximately 5,600 disabling injuries and 150 fatalities annually. Data available from the States and the Federal Bureau of Investigation indicate that the theft rate for light trucks and MVP's, especially vans, is increasing and is similar to the rate for passenger cars. At present, many light trucks and MPV's use the type of anti-theft devices that were unsuccessfully used on pre-1970 passenger cars, i.e., before adoption of Standard No. 114. Because of the disproportionate association of stolen vehicles with accidents, injuries and fatalities, the agency concludes the number of light truck and MPV thefts should be reduced by requiring those vehicles to have certain minimum anti-theft features currently found on passenger cars.

The agency is not adopting the exemption for open body-type vehicles sought by some manufacturers. This action by the agency will not pose any problems for those manufacturers. The concerns that they expressed about those vehicles' ability to comply with the proposed standard dealt with performance requirements that, as explained below, the agency has decided not to adopt. However, because of the accessibility of these vehicles' interiors, it is important to reduce their vulnerability to theft by requiring them to comply with the rest of the proposed requirements.

The notice proposed to extend the applicability of Standard No. 114 to all MPV's. The agency has decided, however, that the rule should apply only to MPV's whose GVWR is 10,000 pounds or less. NHTSA has decided not to extend the standard to MPV's with a GVWR greater than 10,000 pounds because these vehicles are generally not subject to joyrider theft.

Inadvertent Locking

To prevent the accidental locking of the steering system while the vehicle is in motion, the May 1978 notice proposed that the steering and the forward mobility of the vehicle not be impeded when the key is removed from the ignition or when the key is moved from one position to another in the steering wheel lock, such as from "on" to "off." The proposed requirements would have allowed the driver to shut off the engine in an emergency situation, such as when the vehicle suddenly accelerated due to a stuck throttle cable, without activating the vehicle's steering lock and losing control of the vehicle's steering or forward mobility. The proposal would have also prevented the steering lock from activating if the driver removed the ignition key from the steering lock while the vehicle was in motion. NHTSA proposed the requirements in response to a petition from R.L. Bean.

Almost all manufacturers supported the intent of the proposal to prevent inadvertent actuation of the steering lock. The manufacturers argued, however, that they currently have steering lock systems that would prevent inadvertent actuation. Many manufacturers have a system which requires the driver to stop the vehicle's forward motion and take a separate physical action in order to turn the key to the "lock" position and engage the steering wheel lock. For example, in vehicles that have a column-mounted transmission shifter and a steering column lock, the shifter must be moved into "park" or "reverse" before the key can be turned to "lock" and the steering lock engaged. The agency agrees that such systems effectively prevent a driver from activating the steering wheel lock while the vehicle is in forward motion.

The agency is concerned about other current systems which allow the driver to activate the steering lock while the vehicle is still in forward motion. For example, some manufacturers use a system which allows a driver to push a key release button or lever and move the key to the "lock" position, which engages the steering lock, while the vehicle is moving forward. The purpose of the key release system is to require the driver to perform a sequence of acts before locking the

steering to reduce the possibility of activating the lock while the vehicle is in motion. However, some of those systems are designed in such a way that the driver can push the key release lever or button, hold it in place and then simultaneously turn the key to the "lock" position with the same hand. Thus, rather than requiring the driver to perform a sequence of separate and distinct acts before the steering wheel lock can be engaged, those systems allow the driver to simultaneously perform the two actions (pushing the key release device and turning the key to the "lock" position) necessary to engage the steering wheel lock.

To prevent the danger of activating the steering lock while the vehicle is in motion, the agency is prohibiting the use of systems which allow drivers to activate the key release device and simultaneously turn the key to the "lock" position with one hand. Manufacturers will still be permitted to use key release devices which are positioned in such a way that two hands must be used to activate the key release and then turn the key (e.g., a system where the key release device is on one side of the steering column and the ignition lock is on the other side) since those systems minimize the possibility of locking the steering while the vehicle is in motion by requiring a distinct sequence of separate acts that must be performed by two hands.

Several commenters, such as Mercedes-Benz and the Japan Automobile Manufacturers Association (JAMA), requested the agency to pattern its requirement on inadvertent activation of locking systems on the Economic Commission for Europe (ECE) regulation. The ECE regulation specifies that anti-theft devices which impede the steering or forward mobility of the vehicle cannot activate until the engine is off and the driver has performed another separate action other than turning the engine off, such as withdrawing the key. The agency has decided not to adopt the ECE regulation. The NHTSA believes that this rule does not effectively minimize the possibility of accidental lock-up, because it does not require the driver to perform a sequence of separate and distinct acts in order to activate the steering wheel lock.

Stronger Ignition Locking System

Manufacturers, such as GM, Ford, Mercedes and VW, supported a requirement that the ignition lock be designed to resist removal. However, they criticized the agency's proposal that the ignition system become inoperative if any part of the lock were removed. For example, Ford argued that the proposal would require the ignition to be inoperative even if only a small portion of the lock were removed and the remaining portion of the lock still performed satisfactorily. The manufacturers argued that the agency needs to more specifically define the proposed performance requirements and establish an objective test procedure before issuing a final rule.

Requiring stronger ignition and steering locking systems is potentially one of the most promising ways to effectively reduce vehicle thefts. Even if a thief gains entry to a vehicle, the ignition and steering lock must be circumvented in order to drive the vehicle. Although some manufacturers voluntarily have taken steps to strengthen their ignition locks, it is too easy to remove the ignition lock and start the engine in many vehicles.

To develop an improved ignition lock requirement, NHTSA contracted with the National Bureau of Standards to do tensile, torque and extraction testing on current ignition lock systems (NHTSA Contract HS-9-02150). The report was completed this fall and is presently being evaluated by the agency. Upon completion of this evaluation, NHTSA will consider new rulemaking to propose specific performance requirements for ignition lock retention and ignition system operation.

Audible Warning

Passenger cars are currently equipped with a warning device to remind the driver to remove the key. The device activates when the key is left in the ignition lock and the car door is opened. The agency's proposal to require an audible warning and to require the warning device to sound for so long as the key is not removed after the door had been opened met with substantial opposition from consumers and vehicle manufacturers. They argued that the proposed sound level required for the warning device would be too loud and therefore irritating to vehicle occupants. MVMA and others also argued that the proposals would require a continual warning in many situations, such as parking lots, services areas and car washes, where keys are legitimately left in the

ignition after the driver has left the vehicle. In addition, they argued that the power necessary to continually operate the warning device could cause battery failure.

Based on its evaluation of the comments, the agency has decided to retain the current warning requirement and not adopt the proposed requirement for a continuous, louder audible warning. The current requirement, which has reduced the incidence of theft due to keys left in the vehicle, will continue to have the beneficial effect of alerting the driver that he or she has left the key in the ignition lock.

Door Locking Systems

To make it more difficult for a thief to break into a vehicle, the May 1978 notice proposed that the door lock be shielded so that it cannot be released by external manipulative devices. The notice also proposed that the door lock buttons be tapered or of uniform thickness to prevent them from being easily opened by manipulative devices and that keys which operate an exterior lock not be able to operate the ignition lock. Vehicle manufacturers, AAA, locksmiths and others criticized these proposals because of the inconvenience and expense they would pose to drivers who inadvertently locked their keys in their vehicles and needed a locksmith to get into their vehicles. AAA noted that 340,000 out of the 17.2 million emergency road calls it responded to in 1977 involved drivers inadvertently locking their keys in their vehicles, argued that the proposed requirements would prevent legitimate service personnel from entering locked vehicles without breaking the windows or otherwise damaging the vehicle.

The Arthritic Society and some consumers were particularly critical of the proposal to require tapered or uniform size door lock buttons. They argued that such buttons would present problems to drivers and passengers with impaired movement of their fingers.

Some consumers and manufacturers also criticized the agency's two-key proposal, i.e., the one that would prevent a key which operates any exterior vehicle lock from operating the ignition lock. (GM currently uses a two-key system.) The commenters argued that using two keys to enter and start the vehicle would be inconvenient. In addition, manufacturers argued that the requirement was design restrictive and might impede the development of other innovative means of locking the door and ignition.

The agency has decided not to adopt these rulemaking proposals. As mentioned previously, using improved ignition/steering locks rather than increasing the amount of time needed to gain entry to the vehicle appears to be the best potential way to reduce vehicle thefts without inconveniencing vehicle users. Further, even in the absence of rulemaking, improvements are anticipated. Manufacturers are currently developing and using new door locking systems to improve vehicle security. The agency will continue to monitor the different door locking systems used by manufacturers to determine if rulemaking is needed.

Interior Hood Release and Shielded Wires

To delay the theft of a vehicle, the May 1978 notice proposed that the hood release be located inside the vehicle. Delaying access to the engine compartment would potentially make it more difficult to "hot wire" the ignition and start the vehicle. The notice also proposed that the ignition wires within the vehicle's interior be shielded so that it would be difficult to "hot wire" the ignition once the thief got inside the vehicle.

Manufacturers, such as GM and Volkswagen, opposed the interior hood release requirement, arguing that since a thief has to gain access to the interior of the vehicle to steal the car, the thief would then have access to the hood release. JAMA, AMC, Chrysler and other manufacturers objected to the shielding requirement, arguing it would make it more difficult to perform legitimate repair work on the ignition wires.

After re-evaluating these proposals, the agency has decided not to adopt them. As explained previously, the agency plans to concentrate its future rulemaking on the more effective route of improving ignition steering column locks. So long as the steering column lock has not been circumvented, a thief cannot steal a vehicle even if he or she has gained access to the engine compartment or the interior ignition wires to "hot wire" the ignition.

Clarification of Requirements

In several of the proposed changes to the text of the standard, the May 1978 notice used the

term "ignition system lock" instead of "key locking system" to refer to the system used to activate the engine. Lucas Industries and others pointed out that diesel, turbine and electrical engines do not have electric ignition systems. The agency will continue using the term "key locking system."

Ford recommended that the agency reword the performance requirement that the steering or forward mobility of the vehicle be impaired when the key is removed to make clear that it only applies when the vehicle is not in motion. The agency has adopted Ford's recommendation and has made the necessary clarifying changes to the standard.

Costs and Benefits

The agency has considered the economic and other impacts of this final rule and determined that this rule is not significant within the meaning of Executive Order 12221 and the Department of Transportation's policies and procedures implementing that order. The agency's assessment of the benefits and economic consequences of this final rule are contained in a final regulatory evaluation, which has been placed in the docket. Copies of that final regulatory evaluation can be obtained by writing NHTSA's docket section at the address given in the beginning of this notice.

As discussed in the evaluation, the agency estimates that the final rule will add $1.51 to the cost of a passenger car and $2.06 to the cost of a truck or multipurpose passenger vehicle. The aggregate consumer cost of the final rule is $3.26 million annually for passenger cars and approximately $6.57 million annually for trucks and multipurpose passenger vehicles.

NHTSA has received complaints from consumers and businesses about vehicles in which the steering system inadvertently locked while the vehicle was in motion. Accidents occurred in several of these cases. The agency expects that the final rule will prevent such inadvertent lock-up, and thus will prevent the deaths and injuries that can result.

The provisions of the final rule should also deter the joyrider thief who accounts for the majority of accidents involving stolen vehicles. Stolen vehicles are involved in approximately one out of every 350 accidents and account for an estimated 5,600 disabling injuries and 150 fatalities annually. The cost to the public from stolen vehicles is enormous, ranging from $1.8 billion to $2.8 billion annually. The agency estimates that the final rule may result in as many as 25 lives saved and 1,120 less injuries annually.

Leadtime Requirements

The final rule is effective on September 1, 1982, for passenger cars, and on September 1, 1983, for light trucks and vans. The agency believes that a two-year lead time is adequate for passenger car manufacturers because many automobiles already comply with the final rule. Other manufacturers have systems that permit activation of the steering wheel lock by simultaneously performing two actions, and thus these manufacturers need only make minor modifications to bring these systems into compliance. Manufacturers of light trucks and vans are being given three years to comply with the standard because moderate design changes are involved and such manufacturers have generally not voluntarily complied with the rule in the past.

The principal authors of this notice are Nelson Erickson, Office of Vehicle Safety Standards, and Stephen Oesch, Office of Chief Counsel.

Issued on December 22, 1980.

Joan Claybrook
Administrator

45 FR 85450
December 29, 1980

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 114

Theft Protection

(Docket No. 1-21; Notice No. 6)

ACTION: Final rule; response to petitions for reconsideration.

SUMMARY: This notice responds to ten petitions for reconsideration concerning Safety Standard No. 114, *Theft Protection.* In response to the petitions, the agency is (1) exempting walk-in vans from the requirements of the standard; (2) exempting open-body type vehicles with readily removable or no doors from the key-in-ignition warning requirement; (3) clarifying the provision which requires a manufacturer to have 1,000 different key combinations for each type of vehicle; and (4) deleting the provision, adopted in the last notice, that is designed to prevent the driver from inadvertently locking the steering column while his or her vehicle is in motion. This notice also makes a technical amendment to the standard.

DATES: The effective date of the amendment extending the applicability of Standard No. 114 to trucks and multipurpose passenger vehicles (MPV's) having a gross vehicle weight rating of 10,000 pounds or less is September 1, 1983. This is the effective date previously established in the final rule published on December 29, 1980 (45 F.R. 85450).

SUPPLEMENTARY INFORMATION: On December 29, 1980, NHTSA published in the *Federal Register* (45 F.R. 85450) a final rule making certain amendments to Safety Standard No. 114, *Theft Protection* (49 CFR § 571.114). These amendments extended the applicability of the standard to trucks and multipurpose passenger vehicles (MPV's) with a gross vehicle weight rating (GVWR) of 10,000 pounds or less. The amendments also upgraded the performance requirements of the standard to prevent the driver from inadvertently locking the steering wheel while his or her vehicle is in motion.

Petitions for reconsideration were subsequently filed within the prescribed time limits by the Motor Vehicle Manufacturers Association (MVMA), BMW of North America, Inc. (BMW), American Motors Corporation (AMC), Alfa Romeo, General Motors Corporation (GM), Volkswagen of America, Inc. (VW), Fiat Motors of North America, Inc. (Fiat), Chrysler Corporation (Chrysler), Automobile Importers of America, Inc. (AIA), and Mercedes-Benz of North America, Inc. (Mercedes). In addition, Renault U.S.A., Inc., filed a comment with the agency in which it concurred in the petitions filed by VW and AIA. After evaluating these petitions, the agency has decided to modify, as fully detailed below, some of the requirements of the standard. The agency is also making a technical amendment to the standard in this notice. To the extent set forth below, the petitions are granted. Otherwise, they are denied.

Exemption for Walk-in Vans and Open-Body Type Vehicles

In general, the reaction of the petitioners to the amendments extending the standard to light trucks and vans was positive. Chrysler

stated that Standard No. 114 has been effective in deterring motor vehicle theft by amateur thieves and joyriders and thus it approves of the extension. However, several petitioners asked for an exemption from all or parts of the rule for specific types of vehicles.

GM requested that walk-in vans be exempted from all of the standard's requirements. (A walk-in van is a "step-van" city delivery type of vehicle that permits a driver to enter the vehicle without stooping. Such vans are typically used to deliver lightweight, bulky merchandise such as bakery products or dry cleaning. GM describes a walk-in van as a forward control chassis which it designates as a "P truck.") GM argues that such vehicles should be exempted from the standard because there are no data to indicate a significant theft problem with these vans. Walk-in vans are exempted from the requirements of Safety Standards Nos. 203, 204, 212, and 219 because compliance with these standards "would not accomplish the safety benefits projected for passenger cars" and because these vehicles are used for low-speed city delivery service and thus are not exposed to the risk of high-speed accidents. According to GM, the lack of data indicating a theft problem provides a similar reason for exempting walk-in vans from Standard No. 114. GM notes that without the exemption, a new steering column might have to be designed, tested, tooled and manufactured for this vehicle. The petitioner suggests that the cost of such a column to purchasers could be "significant" since a low number of walk-in vans are produced.

The fact that GM might have to redesign the steering column used in these vehicles if it is forced to comply with the rule is not dispositive by itself. Compliance with any new standard or amendment to an existing rule typically requires a vehicle or equipment manufacturer to make design or tooling changes. This fact is considered by the agency in deciding whether to adopt a proposed rule or amendment.

However, the agency has decided to exempt walk-in vans from the requirements of Standard No. 114. Walk-in vans are generally commercial vehicles that have minimal capacity to accelerate and thus are not attractive to the youthful joyrider. NHTSA expects that as a result the theft rate of these vehicles is considerably less than the theft rate of other light trucks and vans. The theft rate of walk-in vans manufactured by Chevrolet and GMC supports this. The 1979 nationwide theft rate of all registered model years 1972-1980 walk-in vans manufactured by Chevrolet and GMC was one-third of the 1979 nationwide theft rate of all registered model years 1972-1980 light trucks that were built by these companies. NHTSA derived this statistic from information supplied by R.L. Polk, Inc. and National Automobile Theft Bureau. Thus NHTSA has decided to grant GM's petition and exempt walk-in vans from the requirements of the standard. However, the agency will continue to monitor the theft and accident rates of these vehicles, and will initiate rulemaking should the data indicate that application of the standard's requirements would yield a significant safety benefit.

AMC and MVMA requested that open-body type vehicles which lack a driver's door or have one that can be readily removed be exempted from the standard's key-warning requirements (paragraph S4.7 of the December 1980 final rule, renumbered S4.5 in today's rule). (An open-body type vehicle is a vehicle that has no occupant compartment top or one that can be installed or removed by the user at his or her convenience.) The petitioners argued that it is impracticable and unreasonable to require a key-warning system that is activated when the driver's door is open on a vehicle whose driver's door has been removed or on a vehicle which was produced without a driver's door. NHTSA agrees with this argument and so is amending the standard to exempt open-body type vehicles from the warning requirements. Only vehicles without doors or with readily removable ones are so exempted.

The agency notes that a seat sensor could be used to signal the presence of the key in the ignition after the driver has left the vehicle. A requirement for such a system was not within the scope of the proposal and thus could not be adopted here. NHTSA encourages

manufacturers of open-body type vehicles that are exempted from the standard's warning requirements to voluntarily employ a system such as this.

Number of Key Combinations

Paragraph S4.6 of Standard No. 114 as amended in the December 1980 notice (paragraph S4.4 in today's rule) specifies the minimum number of different combinations of the key-locking systems required of a manufacturer for each vehicle type. The provision requires that manufacturers have 1,000 combinations for a type of vehicle or a number equal to the number of vehicles of that type, whichever is less. The purpose of the requirement is to ensure that each manufacturer has a sufficiently large number of key combinations so that thieves are not readily able to unlock and start vehicles through the use of master keys.

VW in its petition requested that this provision be modified. Although the petitioner does not state its position directly, it appears that VW has misinterpreted the requirement. VW implies that the provision requires a manufacturer to have, for each vehicle type, 1,000 key combinations that are not only different from each other, but also different from the key combinations used for other types of vehicles built by that manufacturer. This is not the case. Paragraph S4.6 of the standard as amended in the last notice only requires that a manufacturer who builds 1,000 or more vehicles of a particular type have at least 1,000 different key combinations. If a manufacturer builds more than one type of vehicle, it is free to use the same key combinations for two or more types of vehicles. Thus a manufacturer who builds 2,000 passenger cars and 1,100 trucks need only have 1,000 key combinations, which may be used for both the trucks and the passenger cars. The standard has been amended to clarify this point.

It is not necessary for a manufacturer to have more than 1,000 key combinations in order to achieve the objectives of the requirement. The agency finds that 1,000 different key combinations is a sufficiently high number to discourage thieves. Speed in entering and starting a vehicle is critical to successful vehicle theft. The agency finds that the key-combinations requirement will do much to slow down the efforts of thieves using master keys.

In its petition, VW complains that the phrases "for a type of vehicle" and "vehicles of that type" as they are used in paragraph S4.6 are unclear. "Vehicle type" and similar phrases have long been used by the agency typically to refer to groups of vehicles such as passenger cars and trucks. To ensure that there is no confusion in the future as to the meaning of "vehicle type," the agency is defining this phrase in the definitions paragraph (S3) of today's rule.

Inadvertent Activation

The amendments regarding inadvertent activation of the steering column lock were the most controversial of all the amendments adopted in the December 1980 final rule. These provisions (S4.3 and S4.5 of the standard as amended by that rule) were intended to prevent the driver from accidentally locking the steering system while the vehicle is in motion. For example, a panicked driver might accidentally lock the steering column in an emergency situation in which he or she turns off the engine in an attempt to stop the vehicle (such as when the vehicle suddenly accelerates due to a stuck throttle cable). The inadvertent activation provisions were intended to prevent the driver from locking the steering column in a situation such as this by requiring him or her to perform a series of separate and distinct acts in order to activate the locking system.

In the preamble to the December 1980 final rule, the agency described two currently used locking systems that meet the agency's objectives. In one system, found in many vehicles equipped with an automatic transmission and a column-mounted transmission shifter, the shifter must be moved into "park" or "reverse" before the steering lock is engaged. The other system requires the driver to push a key release lever or button and move the key into the "lock"

position in order to activate the lock. This system is effective only if the button is located in a position such that the driver must use both hands to operate the system (henceforth referred to as the two-hand button system). The system does not comply with the agency's intent if the button or lever is positioned such that the driver can push the key-release mechanism and simultaneously turn the key to "lock" using only one hand (henceforth referred to as the one-hand button system).

Mercedes, VW and Chrysler agreed that there is a need to prevent drivers from accidentally locking up the steering column of a moving vehicle. However, these and many other petitioners objected to the particular provisions regarding inadvertent activation that were finally adopted by the agency. The petitioners saw various problems with the amendments.

One basic problem raised by many petitioners was an inconsistency between S4.5 and the intent of the agency as expressed in the preamble to the December 1980 final rule. In the preamble, NHTSA rejected the Economic Commission for Europe (ECE) anti-theft regulation. The agency thereby implicitly rejected those locking systems which are activated by the removal of the key and which permit the key to be removed without the driver's first having to operate a button or lever (henceforth referred to as buttonless systems). However, paragraph S4.5 of the final rule can be interpreted to permit the use of these systems.

Virtually all the petitioners complained that the agency failed to demonstrate a safety need for the inadvertent activation requirements as described in the December 1980 preamble. Alfa Romeo, BMW, VW, and Mercedes all stated that they have employed locking systems that comply with the ECE regulation for many years and have never received any report of an accident or fatality resulting from the inadvertent activation of a lock on a moving vehicle. GM similarly stated that it knows of only five incidents of accidental lock-up among the more than five million vehicles sold in the past 10 years that are equipped with a one-hand button system.

Many petitioners argued that even if there were a safety need for the new requirements, these requirements as proposed in the preamble to the final rule may fail to achieve the benefits anticipated by the agency. They suggested that some people might find a two-hand button system (the cheapest available alternative that complies with the new requirements) so inconvenient that they will leave their keys in the vehicle when making short stops and thus leave their cars more vulnerable to theft. A two-hand button system may be difficult, painful, or impossible for handicapped or arthritis-ridden people to use. These individuals might be similarly inclined to leave their keys in the ignition. Finally, some drivers might develop a reflex action with a two-hand button system, just as they have done so with buttonless and one-hand button systems.

Several manufacturers alleged that compliance with the inadvertent activation requirements as described in the December 1980 preamble will necessitate major design and tooling changes. Mercedes and VW stated that they will have to modify not only the steering column but also the instrument panel if they are forced to comply with the new provisions. Three foreign manufacturers suggested that the agency's rejection of the ECE regulation is not in line with current attempts to harmonize Federal motor vehicle safety standards with automotive standards of other countries.

AMC and AIA complained of lack of notice. They argued that although the general issue of inadvertent activation of the steering column lock was discussed in the NPRM, the notice did not mention the idea of requiring drivers to perform an additional mechanical action in order to activate the steering column lock.

After careful consideration of all arguments raised by the petitioners and further study of the consumer complaints received about inadvertent activation of the steering column lock in moving vehicles, NHTSA has decided to delete the amendments regarding inadvertent activation that were adopted in the December 1980 notice. The

agency disagrees with those petitioners who contend that inadvertent activation is not a safety problem in those vehicles equipped with buttonless or one-hand button systems. Consumer complaints received by NHTSA illustrate that drivers may accidentally lock the steering column in attempting to stop the vehicle in an emergency situation. These complaints have been placed in the public docket and are available for public inspection. However, upon further study the agency has determined that the problem of inadvertent activation is not significant enough to require vehicles to be equipped with key-locking systems that provide better protection against inadvertent activation. As a result, NHTSA has decided to delete paragraphs S4.3 and S4.5 from the final rule as amended in the last notice.

The agency will continue to monitor complaints on inadvertent activation of the steering column lock while the vehicle is in motion and will initiate rulemaking should the data so warrant. NHTSA encourages manufacturers to voluntarily install key-locking systems that provide improved protection against inadvertent activation on their vehicles.

All the petitioners who expressed dissatisfaction with the new requirements regarding inadvertent activation requested that the effective date be delayed for one year or more. Since the provisions on inadvertent activation were the only new requirements for passenger cars, this issue is now moot. BMW also requested that manufacturers of trucks and MPV's be given an additional year of leadtime to comply not only with the new provisions on inadvertent activation but also with the rest of the standard's requirements. BMW never stated that it could not comply with the earlier effective date. More importantly, BMW's request was premised on the assumption that the agency would not rescind the new requirements on inadvertent activation. As noted above, NHTSA has decided to delete those requirements. Accordingly, BMW's request is denied.

Technical Amendment

In the preamble to the final rule, NHTSA stated that it was limiting the extension of Standard No. 114 to MPV's having a GVWR of 10,000 pounds or less. MVMA pointed out in its petition that the application section, S2, of the rule does not make this limitation clear. The agency agrees and is modifying the section accordingly.

Costs and Benefits

NHTSA has considered the economic and other impacts of these amendments and has determined that the rule is not a major rule within the meaning of Executive Order No. 12291. The agency has further determined that the amendments are not significant within the meaning of the Department of Transportation regulatory procedures. In issuing the final rule of December 29, 1980, NHTSA prepared a Final Regulatory Evaluation, which contains the agency's assessment of the benefits and economic consequences of that rule. Copies of the evaluation can be obtained by writing NHTSA's Docket Section at the address given at the beginning of this notice.

The agency believes that additional analysis of the costs and benefits of today's amendments is not necessary in light of the estimates made in the December 1980 Regulatory Evaluation. In that evaluation, NHTSA estimated that compliance with Standard No. 114 would add $2.06 to the cost of a truck or MPV. The aggregate consumer cost would be approximately $6.57 million each year. These figures assumed that truck and MPV manufacturers would use a two-hand button system to comply with the new provisions on inadvertent activation. The agency anticipated that such a system would be the cheapest way for manufacturers to comply with the standard. The new provisions regarding inadvertent activation are rescinded in today's amendments. However, the agency believes that these figures are still a reasonable estimate of the cost of extending Standard No. 114 to light trucks and vans. This is because NHTSA anticipates that some trucks and MPV

manufacturers will choose to comply with the locking provisions by installing a two- or one-hand button system, even though a buttonless system would suffice and would appear to be cheaper. A manufacturer that already uses one- or two-hand button systems in its passenger cars and can easily install the same systems in its light trucks and vans might find this alternative to be the cheapest way to comply with Standard No. 114. Thus NHTSA estimates that extension of Standard No. 114 to light trucks and vans will cost the consumer $2.06 per vehicle. The cost to the consumer will be less to the extent that truck and MPV manufacturers comply with the rule's requirements by using buttonless systems.

The agency has also analyzed these amendments for purposes of the National Environmental Policy Act and has determined that it will not have a significant effect on the human environment.

Although NHTSA has considered the effects of these amendments on small businesses, the agency has not prepared a regulatory flexibility analysis. Such an analysis is not necessary in this case, since the Regulatory Flexibility Act applies only to rules for which an NPRM is issued on or after January 1, 1981. The notice proposing the changes in Standard No. 114 that culminated in the amendments adopted today was issued on April 26, 1978 (43 F.R. 18577, May 1, 1978).

Issued on June 17, 1981.

Raymond A. Peck, Jr.
Administrator
46 F.R. 32251
June 22, 1981

MOTOR VEHICLE SAFETY STANDARD NO. 114

Theft Protection—Passenger Cars

(Docket No. 1-21; Notice 5)

S1. Purpose and scope. This standard specifies requirements for theft protection to reduce the incidence of accidents resulting from unauthorized use.

S2. Application. [This standard applies to passenger cars and to trucks and multipurpose passenger vehicles having a GVWR of 10,000 pounds or less. (46 F.R. 32251—June 22, 1981. Effective: 9/1/83)]

S3. Definitions. "Combination" means one of the specifically planned and constructed variations of a locking system which, when properly actuated, permits operation of the locking system.

"Key" includes any other device designed and constructed to provide a method for operating a locking system which is designed and constructed to be operated by that device.

[''Vehicle type'' refers to ''passenger car,'' ''truck,'' or ''multipurpose passenger vehicle,'' as those terms are defined in 49 CFR § 571.3. (46 F.R. 32251—June 22, 1981. Effective: 9/1/83)]

S4. Requirements.

[S4.1. Each truck and multipurpose passenger vehicle having a GVWR of 10,000 pounds or less manufactured on or after September 1, 1983 and each passenger car shall meet the requirements of S4.2, S4.3, S4.4, and S4.5. However, open-body type vehicles that are manufactured for operation without doors and that either have no doors or have doors that are designed to be easily attached to and removed from the vehicle by the vehicle owner are not required to comply with S4.5. (46 F.R. 32251; June 22, 1981. Effective: 9/1/83)]

S4.1.1. Passenger cars manufactured before September 1, 1982, shall meet the requirements of S4.2, S4.4, S4.6, and S4.7 or the requirements listed in S4.1.2.

S4.1.2. Passenger cars manufactured on or after September 1, 1982, shall meet the requirements of S4.3, S4.5, S4.6, and S4.7.

S4.1.3. Trucks and multipurpose passenger vehicles having a GVWR of 10,000 pounds or less manufactured on or after September 1, 1983, shall meet requirements of S4.3, S4.5, S4.6, and S4.7.

S4.2 Each vehicle shall have a key-locking system that, whenever the key is removed, will prevent—

(a) Normal activation of the vehicle's engine or other main source of motive power; and

(b) Either steering or forward self-mobility of the vehicle, or both.

S4.3. [The prime means for deactivating the vehicle's engine or other main source of motive power shall not activate the deterrent required by S4.2(b).

S4.4 For each vehicle type manufactured by a manufacturer, the number of different combinations of the key-locking systems required by S4.2 shall be at least 1,000, or a number equal to the number of vehicles of that type manufactured by such manufacturer, whichever is less. The same combinations may be used for more than one vehicle type.

S4.5 A warning to the driver shall be activated whenever the key required by S4.2 has been left in the locking system and the driver's door is opened. The warning to the driver need not operate—

(a) After the key has been manually withdrawn to a position from which it may not be turned;

(b) When the key-locking system is in the ''on'' or ''start'' position; or

(c) After the key has been inserted in the locking system and before it has been turned on. (46 F.R. 32251; June 22, 1981. Effective: 6/22/81)]

S4.6 The number of different combinations of the key-locking systems required of each manufacturer for a type of vehicle shall be at least 1,000, or a number equal to the number of vehicles of that type manufactured by such manufacturer, whichever is less.

S4.7 A warning to the driver shall be activated whenever the key required by S4.2 or S4.3 has been left in the locking system and the driver's door is opened. The warning to the driver need not operate—

(a) After the key has been manually withdrawn to a position from which it may not be turned;

(b) When the key-locking system is in the "on" or "start" position; or

(c) After the key has been inserted in the locking system and before it has been turned.

(Sec. 103, 113, 119, Pub. L. 89—563, 80 Stat. 718 (15 U.S.C. 1392, 1401, 1407); delegation of authority at 49 CFR 1.50)

Issued on December 22, 1980.

Joan Claybrook,
Administrator

45 F.R. 85450
December 29, 1980

PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 115

Vehicle Identification Number—Passenger Cars

(Docket No. 1–22)

A proposal to amend section 371.21 of Part 371, Federal Motor Vehicle Safety Standards, by adding a new standard, Vehicle Identification Number—Passenger Cars, was published in the *Federal Register* on December 28, 1967 (32 F.R. 20886).

Interested persons have been afforded an opportunity to participate in the making of the standard. Their comments and other available information have been carefully considered.

The Administrator has concluded that prevention and deterrence of passenger car thefts would substantially reduce the number and seriousness of motor vehicle accidents. Available evidence shows that cars operated by unauthorized persons are far more likely to cause unreasonable risk of accidents, personal injuries and deaths than those which are driven by, or with the permission of, their owners. The incidence of theft and the risk of accidents attributable thereto is increasing. According to a recent study by the Department of Justice, an estimated 94,000 stolen cars were involved in accidents in 1966, and more than 18,000 of these accidents resulted in injury to one or more people. 18.2 percent of the stolen cars became involved in accidents, and 19.6 percent of the stolen-car accidents caused personal injury. The same study predicted that automobile thefts in 1967 would total about 650,000; about 100,000 of these stolen cars would be expected to become involved in accidents. Comparing these figures with statistics for cars which are not stolen, the approximate accident rate for stolen cars would be some 200 times the rate for other cars. Thus, a reduction in the invidence of auto theft would meet the need for motor vehicle safety. It would not only reduce the number of injuries and deaths among those who steal cars, it would also protect the many innocent members of the public who are killed and injured by stolen cars each year.

In its report, "The Challenge of Crime in a Free Society," the President's Commission on Law Enforcement and Administration of Justice noted the rising cost of auto thefts in lives and dollars, highlighted the need for measures to reduce auto thefts and suggested that "The responsibility could well be assigned to the National Highway Safety Agency as part of its program to establish safety standards for automobiles." (pp. 260–261).

The Administrator has decided that the problem of reducing the incidence of automobile thefts should be attacked on a two-pronged basis. On one hand, physical impediments should be placed in the path of potential thieves; to accomplish this, a Motor Vehicle Safety Standard on Theft Protection—Passenger Cars has been promulgated. That standard prescribes automobile equipment which tends physically to defeat an attempted theft. It is equally important to interpose psychological deterrents to automobile theft. A unique identification number affixed to each car in a uniform location and readable from outside the car would serve as such a deterrent. The present standard requires manufacturers to install such a number in each passenger car. When so installed, it will enable law enforcement agencies to find stolen cars and apprehend car thieves with much greater facility than now exists. By confronting a potential thief with the promise of swift and sure apprehension, compliance with the standard will deter him from making off with someone else's automobile. All law enforcement agencies, as well as many other organizations concerned with the rising incidence of car thefts, that responded to the Notice of Proposed Rule Making endorsed the concept of

a visible identification number embodied in the standard. Many of these groups said that the standard would promote efforts to curb unauthorized use of passenger cars. The Administrator has therefore concluded that issuance of the standard will protect the public against the unreasonable risk of accidents stemming from widespread automobile theft.

The Administrator has carefully considered the contention, which some manufacturers advanced, that the standard might actually increase the risk of automobile theft because a thief, armed with ready access to the car's identification number, might thereby obtain a key for its ignition lock. The acquisition of master or identical keys procured through knowledge of a vehicle's identification number is a lengthy and arduous process. Hence, it is a technique that is rarely, if ever, used by amateur thieves whose activities create the greatest risk of stolen-car accidents. Furthermore, as a practical matter, it is possible to utilize this technique only with respect to a relatively small number of cars. The Theft Protection standard, effective January 1, 1970, will result in a larger number of combinations for ignition locks, and this should substantially reduce the effectiveness of master keys. In addition, improved key-control measures can prevent thieves from acquiring duplicate keys simply by knowing the vehicle identification number. On balance, therefore, the Administrator does not agree with those who argue that the standard will not result in an overall reduction in the number of automobile thefts.

The Administrator also rejects the contention that the standard is unnecessary because of the almost universal requirement that all automobiles must bear at least one license plate. Experience has shown that ordinary license plates, located on the outside of a car and installed with screws, are often removed and replaced with other plates. Knowing only the number of the license plates sold to the owner of the stolen car, the police have no sure way of identifying the car when other plates have been attached to it. The standard attempts to overcome this problem by requiring that the car's identification number be affixed with relative permanency.

In addition to license-plate requirements, the laws of many states contain provisions relating to identifying numbers on motor vehicles. The primary purpose of these state-law requirements is to facilitate the issuance and transfer of titles to motor vehicles. So far as the Administrator is aware, no state provides for a number which is readable from outside a vehicle without opening a door, hood or other part of the vehicle. These state requirements are neither safety standards, nor do they relate directly to the prevention of motor vehicle thefts or the apprehension of thieves. Consequently, the Administrator has concluded that the standard will have no preemptive effect upon such state laws.

Several changes have been made in the form of the standard as it appeared in the Notice of Proposed Rule Making. A number of comments objected to the requirement, as stated in the Notice, that the vehicle identification number must "provide permanent legibility" on the ground that it was unrealistic and unattainable. In response to these comments, the requirement was deleted. The term "permanent structure" was defined to clarify its meaning, in the light of a number of submissions which indicated that some manufacturers were confused about the parts of the automobile that were included within the meaning of the term.

Some comments questioned the requirement that the number must be affixed in such a manner that "removal, replacement, or alteration of the number will show evidence of tampering." The requirement has been deleted. The standard now provides that the number must either be sunk into or embossed upon each car's permanent structure or upon a separate plate that is permanently affixed to the permanent structure. The term "permanently affixed" is used in section 114 of the National Traffic and Motor Vehicle Safety Act, and it was retained in the standard notwithstanding contentions that it was not sufficiently definitive.

The portion of the Notice pertaining to readability of the number (paragraph S4.4) was amended to include the conditions under which the number must be readable. This provision was also redrafted to make it clear that the number must be readable from a position outside the vehicle without moving any part of the vehicle. This precludes placing the number in a location such that, in order to read it, a door,

trunk lid or other portion of the car's body must be opened.

In consideration of the foregoing, section 371.21 of Part 371, Federal Motor Vehicle Safety Standards, is amended by adding Standard No. 115 . . . effective January 1, 1969.

This amendment is made under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority of April 24, 1968.

Issued in Washington, D.C., on July 3, 1968.

Lowell K. Bridwell,
Federal Highway Administrator

33 F.R. 10207
July 17, 1968

PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 115

(Docket No. 1–22; Notice 5)

This notice amends Standard No. 115, Vehicle Identification Number (VIN), to extend its applicability to additional classes of motor vehicles and to specify its content and format. The action was undertaken because of the increased use of vehicle identification numbers by the safety community, and is intended to extend and simplify VIN use.

Effective date: January 1, 1980, for passenger cars; September 1, 1980, for other vehicles.

For further information contact:

Mr. Nelson Erickson, Office of Vehicle Safety Standards, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590 (202/426–0854).

Supplementary information:

On January 16, 1978, the National Highway Traffic Safety Administration (NHTSA) published a notice of proposed rulemaking (43 F.R. 2189) which proposed extending the applicability of Federal Motor Vehicle Safety Standard No. 115 dealing with vehicle identification numbers (49 CFR 571.115) to additional classes of vehicles and specifying VIN format and content for specific classes of vehicles.

The uses and users of the vehicle identification number were discussed in detail in the previous notice. In summary, the VIN is used as the key identifier of a vehicle by motor vehicle administrators, manufacturers, insurance companies, law enforcement agencies, and the NHTSA, and is the cornerstone of the safety defect recall program. Also discussed in the previous notice were the long-standing efforts by several groups in the United States and abroad to standardize the VIN format and content and the two major and incompatible VIN systems previously proposed by the International Standards Organization and the Vehicle Equipment Safety Commission.

The system developed by the International Standards Organization (ISO), with the participation of United States representatives from industry and government, consists of 17 characters and is flexible in terms of content. A second system developed by the Vehicle Equipment Safety Commission (VESC), working in conjunction with the American Association of Motor Vehicle Administrators (AAMVA), consists of 16 characters whose characteristics are rigidly defined. While the Motor Vehicle Manufacturers Association (MVMA) attempted to establish a compromise position between the ISO and VESC-AAMVA systems by letter to Commissioner C. B. Craig of California (a copy of which was submitted to the docket), neither party appears to have been persuaded to alter their system and both continue to urge that the jurisdictions they serve and the NHTSA adopt their system.

By issuing a proposal which the NHTSA believed was a first step in establishing a better-engineered, more flexible system serving all users to the greatest degree possible, the agency hoped to elicit comments which would aid it in this endeavor. While some comments merely recited their belief that either the ISO or the VESC-AAMVA system should be adopted in toto, most were helpful in their analysis of the NHTSA proposal. All comments were carefully considered.

The NHTSA concludes it should not change its previous position that neither the ISO nor the VESC-AAMVA systems are sufficient to satisfy the broadest group of potential users of the VIN in the most efficient fashion. In the case of the ISO system, the legitimate needs of the motor vehicle administrators for descriptive information concerning the vehicle identified were not met. It should be pointed out the ISO system was never meant to serve this need, but merely to

identify the vehicle. The VESC-AAMVA systems, on the other hand, while admirably suited to the needs of the States did not take into account fully the needs of the manufacturers and of NHTSA. The most significant comments concerning the NHTSA proposal are discussed below.

Preemption

A threshold question discussed in the notice of proposed rulemaking (NPRM), but raised again by the comments, related to the preemptive effect of the NHTSA standard on non-identical State standards relating to the same aspect of performance (see § 103(d) of the National Highway Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1392(d)). This issue was most comprehensively discussed by the Maryland Department of Transportation, which raised two basic points.

First, Maryland called the attention of the agency to the preamble of the notice, which originally established Federal Motor Vehicle Safety Standard No. 115 (33 F.R. 10207). As originally established in 1968, the standard did not specify requirements regarding either the content or the format of the VIN. In that notice, the Administrator stated that State laws relating to identifying numbers used for titling purposes did not conflict with the standard as then drafted and therefore were not preempted.

The question, however, is not whether Standard No. 115 as originally issued 10 years ago preempted State standards, but whether the expanded standard regarding VIN format and content being promulgated today preempts the States in regulating this aspect of the VIN. As stated in the Advance Notice of Proposed Rulemaking (41 F.R. 38189) and the NPRM, and as reiterated here, it is the agency's view that Standard No. 115 as promulgated by this notice fully occupies the area of VIN format and content and preempts State and local requirements relating to the same matter.

The second legal argument raised by Maryland is that by establishing the format and content of the VIN, the NHTSA is "unabashedly violating fundamental constitutional principles of federalism." The gist of Maryland's argument, as we understand it, is that establishing the content and format of the VIN makes it necessary for the States to purchase computers and record keeping equipment and thereby makes them "quasi-departments and instrumentalities" of the NHTSA. In support of their position, they cite *National League of Cities v. Usery*, 426 U.S. 833, 96 S.Ct. 2465, 49 L. Ed. 2d. 245 (1976).

The NHTSA finds no merit in this argument. *National League of Cities v. Usery* concerned the direct imposition of Federal minimum wage standards by Congress on the States with an additional cost of millions of dollars in State employee salaries and an effect which curtailed the ability of the States to carry on a number of their essential functions. The result of the implementation of Standard No. 115 has no greater effect on the States than do any of the other Federal safety standards which prescribe minimum performance standards for and affect the cost of vehicles which the States purchase. Further, there is no indication in the docket that the VIN format and content established by this notice, as compared to that contained in the VESC-AAMVA system, will have a substantial effect on the States or, as put in *Fry v. United States*, 421 U.S. 542, 95 S.Ct. 1792, 44 L. Ed. 2d 363 (1975), impair their "ability to function effectively in a federal system."

A final argument relating to the preemption issue which was raised in some comments is that the NHTSA has failed to consult with the VESC, as required by § 103(f)(2) of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392(f)(2)) and therefore the issuance of a revised Standard No. 115 is invalid. The plain words of the statute and the legislative history of the Act show clearly that the process contemplated was advising the VESC of NHTSA proposals by issuing them and receiving the VESC comments. In this instance, comments were received from the VESC and carefully considered.

International Harmonization

An important issue raised by most foreign manufacturers, the U.S. Department of Commerce, and the President's Special Representative for Trade Negotiations, Ambassador Robert S. Strauss, was the incompatibility of the NHTSA proposal with the international standard adopted

by the International Standards Organization and, subsequently, by the European Economic Community. This issue was raised not only in relation to the goal of international harmonization of national standards, but also to the need to avoid the creation of unnecessary international obstacles to trade. In this regard, Mr. Strauss noted that a proposed Code of Conduct on Preventing Technical Barriers to Trade was under negotiation in the multilateral trade negotiations. This code would encourage adherents to use relevant international standards as the basis for national standards, except where their use would be inappropriate.

The NHTSA, as a rule, establishes its motor vehicle safety standards outside the channels of multilateral negotiations. NHTSA does recognize, however, the desirability and importance of fostering international cooperation wherever feasible and unfailingly regulates all manufacturers, be they domestic or foreign, in the same equitable fashion. Indeed, it was in this spirit that the NHTSA participated in the meetings which led to the creation of a number of ISO standards and proposals, including the one for the ISO VIN system.

However, through comments received during the rulemaking process, the NHTSA has become aware of the significantly greater potential of the VIN than is realized under the ISO system, both in terms of the amount of information which it can contain and its utility to various users. The efforts of the parties creating the VESC-AAMVA system and the ISO system, as well as their frank and forthright comments concerning the NHTSA proposals, have established clearly the parameters of VIN usefulness and the needs of the users.

Consequently, in developing a VIN format and content which allows it to be used in the most efficient fashion—a goal which all parties agree to—the agency believes it is establishing a VIN system whose merit can and will be recognized by all. Of key importance to the agency in this belief are two facts. First, the VIN format as adopted by the ISO. Further, it is in almost all ways compatible with the VESC-AAMVA system.

The first section of the NHTSA VIN which serves as a maker identifier is fully compatible with the systems proposed by the VESC-AAMVA and the ISO. Likewise the third section of the NHTSA VIN which serves as a vehicle indicator is fully compatible with the systems proposed by the VESC-AAMVA and the ISO. The second section of the NHTSA VIN, which serves as a vehicle description, is somewhat different in structure than that contained in the other two systems. However, it meets the informational needs of the VESC-AAMVA, while allowing the manufacturers the flexibility afforded by the ISO system coupled with the format which the ISO adopted.

Secondly, the ISO system, while adopted in Europe, has yet to be implemented by the manufacturers. The NHTSA sincerely hopes that the ISO, after considering the slight variations to its systems adopted by the agency, will modify its system to make it consistent with the NHTSA rule. In this way, international harmonization can be assured.

Information Coding and Retrieval Techniques

A short discussion of information coding and retrieval techniques will be helpful in understanding the VIN standard.

Information may be directly obtained from a series of alpha and numeric characters. For example, "FORD" indicates the name of an automobile manufacturer without further translation. The same manufacturer may also be represented by a single character, such as "F," but that character must be deciphered to determine whether it represents Ford, Fiat, or some other manufacturer. This process is called coding and decoding.

To decode a character, a "table look up" process is used. The dictionary may be either a reference document or a computer. In both instances, the character "F" will be assigned a meaning in the table, such as "F" means Ford, and looking up either "F" or Ford will allow its meaning to be determined.

The character "F" may represent more than one piece of information, however, even though it is a single character. It can represent the name of a manufacturer, e.g., Ford, the model of

a vehicle produced by Ford, e.g., Pinto, and any other characteristics which the vehicle coded "F" has. This process is similar to a social security number which can be used as a key to a considerable amount of information about the individual to whom that number is assigned.

As a practical matter, this means that a manufacturer can encode more than five pieces of information in a five-character code word. For example, if all 1980 Chevrolet Chevelle, Malibu, Estate Station Wagons were in the same weight class and contained the same restraint system, there would be no need to directly encode this information.

If a one-character alpha/numeric coding system is used, there can only be 35 different unique codes (A-Z, 1–9). For example, if the social security number consisted of only one character, only 35 individuals could be identified. Therefore, to increase the number of possible codes, more than one-character is used. If two-characters are used, there are 1225 possible codes; if three-characters are used, there are 42,875 possible codes; if four-characters are used, there are 1,500,625 possible codes; and if five-characters are used, there are 52,521,875 possible codes. The number of possible code increases exponentially as the number of characters within the code increases.

Purpose and Scope

Several comments to the docket questioned whether the standard would be helpful in simplifying vehicle certification. While the presence of a VIN on the certification label uniquely identifies the vehicle being certified and avoids the need for considerable additional identifying information concerning that vehicle, it is a secondary purpose and has therefore been eliminated as a rationale for promulgation of the standard from the Purpose and Scope section.

Application

The Truck Trailer Manufacturers Association and a number of individual trailer manufacturers strongly opposed the inclusion of truck trailers within the requirements of Standard No. 115. In support of their position, they pointed to the small size of many trailer manufacturers and their lack of access to sophisticated computer equipment. They also pointed to the lack of data relating to a serious safety problem involving trailer theft. Finally, they pointed to the overall government desire to reduce the regulatory burden on businesses.

The NHTSA considered carefully the issues raised by the trailer manufacturers. It concluded that the need for a unified VIN system outweighed the argument of these manufacturers. If States and other users, as well as recall campaigns, are going to establish computer capacity based on a 16-character plus check digit VIN system, allowing a different system will create substantial confusion and perhaps the loss of trailer VINs within the data base because of their aberrant format. Further, the use of a standardized VIN format will allow for the effective tracing of trailers for accident investigation purposes and the use of hidden partial VINs as a law enforcement tool.

In order to deal with the real problems facing the small manufacturer, however, much of the data proposed to be required of the trailer manufacturers has been eliminated. To the extent a limited number of models are produced, the necessary information can be simply represented. The first three characters would represent the maker identifier. The next five characters indicates the model in whatever fashion the manufacturer chooses. Thus, four of these characters could be standardized and only the fifth would be variable if only a limited number of models are made. The derivation of the next character, the check digit, is easily dealt with by the use of an inexpensive, hand-held calculator. The representation of the plant and model year could also be standardized. The determination of the trailer's production sequence, particularly with a small annual output, should not be difficult. The information which is unique to a vehicle can be added to its VIN when the certification label is prepared.

A definition of "manufacturer" has been added to make clear that the final stage manufacturer is responsible for assigning and affixing the VIN.

Based on the suggestion of the Motor Vehicle Manufacturers Association, the term "type" has been substituted for the term "class," but the definition remains the same.

The definition of "model year" is altered to limit the actual period of a model year to just under two calendar years. The NHTSA concludes this will deal with the problem of multi-year model years raised by the AAMVA comment.

Requirements

Several of the commenters expressed the view that affixing a tamperproof label which could not be removed intact was a better method of displaying the VIN than stamping it on a separate plate which was affixed to the vehicle. The language of S4.3 is amended to indicate this is permissible. Volvo commented that the phrase "sunk into or embossed" was technically limiting, and the language is therefore broadened to read "appear clearly and indelibly." The agency also wishes to call to the attention of the manufacturers selecting the option providing for a separate plate that whether or not a plate is "permanently affixed" is a matter which the agency intends to examine carefully.

Legibility Requirements

Many manufacturers commented unfavorably on the comprehensive legibility and positioning requirements of the VIN, stating they were design restrictive and unnecessary. In support of their position, they also pointed to increased retooling expenses and an increase in the size of the VIN plate if the requirements were adopted.

Consequently, the NHTSA concludes that it will limit its legibility requirements to the minimum necessary to ensure an accurate reading of the VIN. These specify a minimum character height of 4 mm and that only capital, sans serif characters appearing on a contrasting background shall be used. If future data indicates these requirements are not sufficient, they will be strengthened. S4.3.1 and S4.5 are therefore substantially amended and S4.4.1 is deleted.

Section I—MAKER IDENTIFIER

The use of the first three characters of the VIN to uniquely identify the manufacturer, make and type (previously designated "class") of the motor vehicle if the manufacturer produces 500 or more vehicles of its class annually is retained as proposed. The use of the first three characters of the VIN and the first three characters of the segment of the VIN which indicates the production sequence of the vehicle to identify manufacturers of less than 500 vehicles in a class annually is also retained.

The AAMVA comment in relation to the maker identifier requirement was that motor vehicle administrators register vehicles by make, never by manufacturer. Consequently, the requirement was said to be "totally redundant." Foreign manufacturers, on the other hand, point out that a make classification is essentially a United States phenomenon, and is therefore not important. However, under the NHTSA proposal neither manufacturer nor make is directly represented in the identifier. If State motor vehicle administrators are concerned only with a vehicle make, they need only program their data processing equipment to derive the make from the three-character identifier code. If foreign manufacturers do not utilize the make designation, then they need only advise the NHTSA of this fact when they submit information to the agency relating to the meaning of their identifier.

The Society of Automotive Engineers (SAE) pointed out its work in the area of manufacturer identification and volunteered to be the repository and assignor of maker identifiers. The NHTSA must accept, of course, the ultimate responsibility concerning maker identifiers. The standard provides, however, that an agent of a manufacturer can submit the maker identifier. The NHTSA would welcome the SAE carrying out these responsibilities as the agent of manufacturers, thus avoiding the potential confusion and initial duplication forecasted by many comments.

Section II—VEHICLE ATTRIBUTES

Section II of the VIN, relating to vehicle attributes, caused the most confusion among those commenting. The AAMVA and VESC strongly opposed the NHTSA vehicle attributes section proposal, although the differences between the VESC-AAMVA system and the NHTSA system were minimal.

Under the VESC system, there would be five characters in the vehicle attribute section. The first four characters would be a "code word" from which a vehicle's line, series, and body type could be deciphered and the fifth would be a second "code word" decipherable into the engine type. Under the NHTSA proposal, the vehicle attribute section would have consisted of six characters representing a "code word" from which the information required by the VESC as well as additional information the NHTSA believed was important could be deciphered. Thus, the difference between the VESC and NHTSA resolved itself into the amount of information contained and the use of two code words versus one code word.

While many commenters recommended the use of the VESC system because of its fixed-length, fixed-field format, in the second section, both systems were of a fixed length and, except for a specific position to represent engine type, both had the same degree of a fixed field.

After a review of the comments, the NHTSA has determined that all of the information proposed to be required is not necessary at this time as discussed below. Consequently, only five characters are needed in the vehicle attributes section to allow for an adequate number of code words to represent the required information. Because of this change the designation of the plant of manufacture has been moved to the third section as is discussed below. Further, the sixth character of this section has been replaced by the check digit as is also discussed below.

It would be useful at this time to review the NHTSA requirements for the vehicle attribute section promulgated in this notice as compared with the VESC-AAMVA and ISO systems.

A typical NHTSA vehicle attribute section for a passenger car would appear as follows: RX6302

The first five characters would be a code word from which is deciphered the line, series, body type, engine type, weight class, and restraint type. The sixth character would be the check digit. It should be noted that the check digit need not be stored in a computer memory bank, as it can be regenerated during printout.

A typical VESC-AAMVA vehicle attribute section for a passenger car would appear as follows: RX63D

The first four characters would be a code word from which is deciphered the line, series and body type. The fifth character would be a code word decipherable into the engine type.

A typical ISO vehicle attribute section for a passenger car would appear as follows: RX63D2

All six characters would be decipherable into a series of discretionary vehicle attributes.

Informational Requirements

Many commenters indicated that they believed much of the information required by the agency to be decipherable from the vehicle attribute section was not necessary. After a review of the comments, the NHTSA has determined to require for passenger cars only that information required by the VESC-AAMVA system and information relating to weight class and occupant restraint type. Information requirements for the other type of vehicles are also reduced.

Several comments pointed out that only the final stage manufacturer would be able to assign the VIN as the vehicle's characteristics would not be known until that time. The comments also pointed out this raised a problem when a defect campaign was required of a first and second stage manufacturer. To ease this problem, the NHTSA has concluded that the identity of any previous manufacturers should be decipherable from the vehicle attribute section. This procedure has been developed by the Society of Automotive Engineers for their recommended practice for motor home vehicle identification numbers. The agency also assumes that manufacturers will keep sufficient records pursuant to their responsibilities under the National Traffic and Motor Vehicle Safety Act to trace incompleted vehicles sold to final stage manufacturers.

Because of the flexibility afforded by the five-character vehicle attribute section, further information could be required in the future without any change in the VIN format as established by this rule.

Section III—VEHICLE IDENTIFIER

Model Year

The NPRM proposed that either a vehicle's model year or the calendar year of manufacture be encoded in the first character of the vehicle identifier section. Many comments suggested this would be confusing, and that only model year should be encoded as this is the most representative category. The NHTSA concurs in this view, and S4.5.3.1 is amended accordingly. While one comment suggested including a direct two-digit code representing the last two numbers of the year, the NHTSA concludes that there is not sufficient space in the VIN to include two characters as a year identifier.

Plant of Manufacture

Numerous comments were made relating to what was perceived as optional identification of the plant of manufacture in the NHTSA proposal. As the proposal stated, however, the plant of manufacture was required to be identifiable either directly from the last character of the vehicle attribute section or indirectly from the entire VIN. At no time was the inclusion of the plant of manufacture made optional.

After reviewing the comments to the docket from the manufacturers, however, the NHTSA has concluded that the added flexibility of allowing the plant to be derived from the entire VIN rather than a specific character is not necessary, and that the more traditional approach as embodied in the VESC-AAMVA and the ISO systems should be established. Consequently, plant of manufacture is not required to be designated in the second character of the third section (vehicle attribute section).

Production Sequence Number

The NPRM proposed that the last six characters represent the sequential number of a vehicle when the manufacturer produced more than 500 vehicles annually of that type. The Truck Trailer Manufacturers Association stated that some of their members might desire to keep secret for competitive purposes the number of vehicles they produce annually. Since a manufacturer may begin his sequence at any number, however, so long as the order thereafter is maintained in sequence, the actual number of vehicles produced can be kept secret.

A number of comments pointed out that for various reasons a vehicle might be taken from a production line, thereby having an actual sequential number which differs from the production sequence number originally assigned by the manufacturer. The proposal is amended to indicate that the production sequence number is required. Other comments questioned how the system could deal with manufacturers who produced less than 500 vehicles in a class one year and more than 500 in the next. It should be noted that occasional overruns can be accommodated up to a total of 999 vehicles annually without the assignment of a different manufacturer identifier.

Check Digit

The requirement for a check digit is retained as proposed, but the check digit itself is repositioned within the VIN. Many commenters stated that the system proposed by the VESC-AAMVA, utilizing a computer "edit routine" as well, designating many characters as either alpha or numeric, would be more efficient in reducing errors.

Both the check digit and the edit routine procedures are designed to reduce errors. The edit routine process analyzes the VIN in two areas. First, it considers the basic format utilized by a manufacturer, thereby discovering format errors. Secondly, it considers whether characters which should be either alpha or numeric meet these requirements. Thus, the edit routine can pinpoint with some accuracy where certain errors occur in a VIN.

The check digit routine, however, is able to discover errors missed by the edit routine process, such as mistaken characters of the same type (alpha or numeric). The check digit when used in conjunction with an edit routine can find a greater proportion of errors than can be found using the basic edit routine proposed by some commenters. Further, the check digit, unlike the edit routine which needs substantial data processing capability to be utilized, can be utilized by policemen or clerks equipped with an inexpensive hand-held calculator.

As a practical matter, the NHTSA expects that many users of VINs will utilize a combination of the two routines to minimize VIN error. Thus, the format of a VIN will be checked against that expected for a particular manufacturer and the check digit will be utilized to ensure that VINs which are properly formatted also contain the proper alpha and numeric characters.

Given the fact that both approaches would reduce the error rate, the NHTSA concluded that it would utilize the check digit since its use did not limit the flexibility of the system. The fixed format proposed by VESC-AAMVA did provide information they sought. However, other users of the VIN, notably the manufacturers and the research community, were not provided the flexibility to make use of the potential capacity in the VIN to provide additional information.

Several of the commenters, particularly those from the insurance industry, raised the questions of whether the check digit would be utilized by all users and the inability to determine the correctness of the VIN if the check digit was not used. While the authority of the NHTSA extends only to motor vehicle manufacturers, the agency fully expects all users interested in maintaining the integrity of their records to utilize the VIN with the check digit.

Some commenters also stated their fear that when the VIN was reported from the field, some observers might neglect to include the check digit. Consequently, the check digit has been repositioned from the end of the VIN to the end of the second section to make it an integral part of the VIN.

Several commenters questioned the need for the check digit, pointing to the experience of the State of North Carolina in reducing its VIN transcription error rate to less than 1 per cent without the benefit of either a check digit or alpha/numeric designation requirements. The NHTSA would seriously consider any petitions for reconsideration which clearly demonstrate that neither a check digit nor alpha/numeric designation requirements is necessary to substantially reduce error in transcribing the VIN.

Reporting Requirements

Some commenters questioned the NHTSA proposal in that it allows manufacturers to display information in a unique format and to change that format within 60 days notice to NHTSA. They felt this would create confusion and the added expense of continual reprogramming.

However, it should be noted that the VESC-AAMVA system also allows manufacturers that same right, i.e., the right to change the code which represents various informational elements, but makes no provision for advance warning. Indeed, the VESC-AAMVA system is silent as to how the users of the VIN will be informed of the meaning of the characters adopted by manufacturers. Consequently, no change is made to the reporting requirements as proposed by the agency. It should be noted that the NHTSA does not anticipate that manufacturers will have any need to change codes within model years.

The principal authors of this notice are Nelson Erickson of the Office of Vehicle Safety Standards, Crash Avoidance Division, and Frederic Schwartz, Jr., of the Office of Chief Counsel.

In consideration of the foregoing, Standard No. 115, 49 CFR 571.115 is amended. . . .

(Sec. 103, 112, 119, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1401, 1407); delegation of authority at 49 CFR 1.50.)

Issued on August 11, 1978.

Joan Claybrook
Administrator

43 F.R. 36448–36452
August 17, 1978

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 115

Vehicle Identification Number

(Docket No. 1–22; Notice 8)

Action: Final rule and response to petitions for reconsideration.

Summary: This notice amends Federal Motor Vehicle Safety Standard No. 115, *Vehicle identification number.* It establishes a fixed format for vehicle identification numbers (VINs) assigned to passenger cars, multipurpose passenger vehicles with a gross vehicle weight rating of 10,000 pounds or less and trucks with a gross vehicle weight rating of 10,000 pounds or less. This amendment is made to meet the needs of State motor vehicle administrators, insurance companies and other users who desire a means of discovering certain types of transcription errors in VINs at the earliest possible stage. To facilitate manufacturer compliance with this amendment, the requirement that gross vehicle weight rating (GVWR) be decipherable from the VIN of passenger cars is deleted.

The notice also positions the check digit, a means for detecting errors in the VIN, immediately following the eighth character of the VIN. This amendment is made to facilitate manufacturers encoding the VIN.

The date of September 1, 1980, for compliance with the standard is retained but specific authorization of an earlier optional compliance date is deleted.

The requirement that the three sections of the VIN be separated by spaces is also deleted in the interest of lessening the cost burden to manufacturers and promoting international harmonization. The requirement that VIN characters have a minimum height of 4 mm is limited to the VIN displayed in the vehicle passenger compartment, as only that VIN needs to be read from a distance.

In response to petitions, the responsibility of assigning the VIN to motor homes is shifted from the final stage manufacturer to the incomplete vehicle manufacturer.

The standard is also amended to simplify GVWR encodement requirements for vehicles. Petitions to delete the requirement that engine type and net brake horsepower be encoded in the VIN of certain vehicles are denied, but petitions are granted to delete engine make and model from the information required for vehicles with a GVWR of over 10,000 pounds.

Effective date: September 1, 1980.

For further information contact:

Frederic Schwartz, Jr., Office of the Chief Counsel, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590 (202–426–1834).

Supplementary information:

On November 9, 1978, the National Highway Traffic Safety Administration published in the Federal Register two notices relating to Federal Motor Vehicle Safety Standard No. 115, Vehicle identification number (49 CFR 571.115). These notices, which were issued in response to petitions for reconsideration, amended the standard (43 FR 52246) and proposed additional amendments to the standard (43 FR 52268). Several petitions for reconsideration of the amended standard were received, as were a number of comments concerning the proposal.

The establishment of an acceptable VIN standard has been a long and arduous process. As was pointed out in the advance notice of proposed rulemaking published in the Federal Register on September 9, 1976 (41 FR 38189), NHTSA activity in this area was preceded by the development

of a number of competing, incompatible VIN schemes. The two major VIN schemes were that of the Vehicle Equipment Safety Commission (VESC) (supported by the American Association of Motor Vehicle Administrators and the States) and that of the International Standards Organization (ISO) (supported by the European Economic Community and most domestic and foreign vehicle manufacturers). These schemes were the ones on which the NHTSA focused as a starting point in its effort to establish a standard that would meet the need for motor vehicle safety and serve the needs of all VIN users. As the rulemaking progressed (43 FR 2189, 43 FR 36448, 43 FR 52246, 43 FR 52268), both the ISO and VESC schemes came closer together. However, both schemes remain incompatible in a number of respects.

The uses and users of the VIN have been discussed in detail in previous notices. In summary, the VIN is used as the key vehicle identifier by motor vehicle administrators, manufacturers, insurance companies, law enforcement agencies, and the NHTSA. It is the cornerstone of the safety defect and standard noncompliance recall program, and an important element in manufacturer quality control and in vehicle theft recovery. Its use as an information tool in the analysis of accident reports is of great importance to safety research and rulemaking.

The NHTSA standard adopts the most efficient and effective aspects of both the VESC and ISO standards, while broadening those standards' information function to include matters of specific importance to this agency's safety responsibility. Further, the NHTSA standard includes features which result in more data storage accuracy than is possible under the VESC standard, while remaining harmonious with the ISO scheme now adopted by the European Economic Community.

Engine Type Information

Several manufacturers petitioned to remove the requirement that engine net brake horsepower be decipherable from the second section of the VIN. The basis for this request was that the definition of "Engine Type" includes net brake horsepower among the characteristics to be considered in differentiating one engine type from another.

These petitions are denied. While net brake horsepower is among the characteristics to be considered in establishing an engine type, there is no requirement that it be encoded in the engine type code. In some instances, such as with heavy truck engines, encodement would not be practicable. However, if net brake horsepower is actually decipherable from the engine type, then the requirement that it be decipherable from the second section of the VIN is met and it need not be encoded a second time.

Several petitioners requested a clarification of the meaning of "make and model" in relation to engine type and a definition of "net brake horsepower." International Harvester (IH) also petitioned to eliminate engine make and model information encoding requirements for trucks since they utilize more makes and models than can be represented by one position in the VIN. Further, IH stated that in its view this information has no safety relationship.

To clarify the requirements for "make and model" information, the phrase "manufacturer and make" is substituted in the definition of engine type. The term "manufacturer" has its current meaning within Part 571, and the term "make" as defined in S3 is expanded to include engines. Thus, engine "make" is defined as the name which the manufacturer applies to a group of engines (e.g., General Motors Oldsmobile engine).

The specific reference to engine make and model was added to the definition of engine type at the request of the States. They were concerned primarily about the problem of engine switching between the divisions of passenger car manufacturers. The NHTSA is also concerned that this information be available to ensure the accuracy of its safety and fuel efficiency research, since the performance of two different engines classified as the same "type" may differ. The NHTSA concludes it can resolve these concerns while not placing an unnecessary burden on truck and other heavy duty vehicle manufacturers where engines are used interchangeably. Therefore, the requirement that engine make and model be reflected in the VIN is amended to require only that engine manufacturer and make be reflected for passenger cars, multipurpose passenger vehicles with a

GVWR of 10,000 pounds or less, and trucks with a GVWR of 10,000 pounds or less. It is in these categories of vehicles that engine types are standardized and consumers are less knowledgeable about the specifications of the vehicles they purchase.

Harley-Davidson Motor Co., Inc. also asked the agency to define the term "net brake horsepower" and to indicate whether SAE Standard J245 was the intended meaning. Because several definitions of net brake horsepower exist, the agency has concluded not to specify the precise definition to be used, thereby allowing manufacturers to continue using their current method of evaluating the net brake horsepower of their vehicles. In submitting the net brake horsepower of these vehicles, however, manufacturers should submit the definition of the term they are utilizing.

VIN Legibility

In the final rule published on August 17, 1978 (43 FR 36448), S4.5 provided that the three sections of the VIN should be grouped, i.e., appear as a full section without being split, but inadvertently omitted the provision that had been proposed for requiring spacing between the sections. This omission was corrected in the amendment to the rule published on November 9, 1978 (43 FR 52246), which specified that the space between sections shall be twice that of the space between characters.

A number of manufacturers petitioned for reconsideration of this provision, claiming lack of notice for it. These manufacturers indicated what they considered to be serious lead time problems and substantial cost increases if the spacing requirement was not deleted. They also cited section 5.7 of ISO 3779, which provides that spaces should not appear in the VIN, although a symbol or character may be used between sections. While the agency still believes that separating the three sections of the VIN would improve the accuracy of its transcription, the added cost burden to the manufacturers and the interests of international harmonization argue in favor of deleting the spacing requirement. The requirement is therefore eliminated. The agency points out, however, that the legibility of the VIN is of concern and will be carefully reviewed after the standard takes effect.

Ford Motor Co. points out that S4.3.1 requires that all characters in the VIN must have a minimum height of 4 mm regardless of where the VIN appears on a vehicle. The intent of the agency, as Ford correctly perceives, was to limit the requirement to the VIN as it appears in the passenger compartment, since only in that location need the characters be read from a distance. The standard is amended to make this limitation clear.

Incomplete Vehicle Attributes

Table I in the standard categorizes vehicles by type and specifies the vehicle attributes that must be decipherable from the VIN for each type. In the amended standard published on November 9, 1978, the agency added a type designated "incomplete vehicle." The attributes required to be decipherable from the VIN for this type were those attributes common to both trucks and buses. This type was established because incomplete vehicles often may be completed as either a truck or a bus, and the incomplete vehicle manufacturer would have little way of knowing the final configuration.

American Motors Co. petitioned the agency to delete the requirements for incomplete vehicles and require instead that the second section of the VIN of incomplete vehicles reflect those attributes which the incomplete vehicle manufacturer anticipates the vehicle will have when completed. As this would place a more onerous burden on the manufacturers by requiring additional information to be encoded than the current requirement, as well as call for considerably more prescience than the manufacturers have suggested they usually possess, the petition is denied.

In this regard, it should be noted that the language of S4.5.2 and the "incomplete vehicle" type category in Table I contained in the amendment to the rule published November 9, 1978, were inadvertently omitted from the notice of proposed rulemaking issued the same day. The amended rule issued today corrects that error. The definition of the term "type" is also amended to include "incomplete vehicle" as a separate type.

Assignment of the VIN to Motor Homes Manufactured in More Than One Stage

The amendment published on November 9, 1978, provided that in the case of vehicles other than motor homes, manufactured in more than one stage, the VIN would be assigned by the incomplete vehicle manufacturer. In the case of motor homes, the final stage manufacturer would make the assignment. The rationale of the agency for requiring the final stage manufacturer of motor homes to assign the VIN rested on two grounds. First, the comments to the docket submitted by the Recreational Vehicle Industry Association (RVIA) in response to the notice of proposed rulemaking (Docket entry 1–22–N04–048) appeared to support motor home manufacturers assigning the VIN for their vehicles, and the RVIA did not petition to change the requirement after the publication of the final rule on August 17, 1978. Secondly, a number of States and State organizations pointed out the law enforcement problems inherent in identifying a vehicle whose outward appearance was, for example, a Winnebago while the manufacturer identifier indicated the vehicle was a Ford.

In response to the November response to petitions, petitions for reconsideration were received from the RVIA, jointly from the VESC and the AAMVA (VESC/AAMVA) and from the State of Maryland. The RVIA, in its petition, appears to have reversed its previous position, and cites a number of practical and economic reasons why the incomplete vehicle manufacturer should assign the VIN to motor homes. These include the need for uniform VIN assignment by the incomplete vehicle manufacturer, unavailability to the final stage motor home manufacturer of necessary data concerning the incomplete vehicle, the need of incomplete vehicle manufacturers to carry out recall campaigns, and the economic burden on lower volume motor home manufacturers. The VESC/AAMVA and State of Maryland in their petitions appear to believe that law enforcement officers will be able to identify motor homes by the manufacturers of their underlying chassis. Further, it appears that the States adopted a procedure on September 14, 1978, by which the final stage motor home manufacturers would add an additional three character identifier to the incomplete vehicle manufacturer's VIN. The States would then add that identifier to their VIN files.

It is not clear to the agency how the States can include this additional information in their data storage systems based on their stated capacity in other comments to the dockets. Nonetheless, the exception to the rule in the case of motor homes was created in response to the initial comments of the manufacturers and the States. They now conclude such a provision will be a hindrance. For that reason and because either the incomplete vehicle manufacturer or the final stage manufacturer is capable of providing a VIN, the agency believes it appropriate to remove the exception. Therefore, sections S2, S3, and S4 are amended accordingly.

Mack Truck also petitioned to eliminate requirements for encoding those truck attributes which can be easily altered by purchasers. While it is true that several of the attributes required might occasionally be subsequently altered, such as altering gross vehicle weight rating by changing tires, the agency concludes that this information is still important as a basic classifier of vehicle type for safety research and should be required. In most instances, the agency believes this information will not become invalid.

Check Digit Highlighting

The November 1978 notice of proposed rulemaking requested comments on the effectiveness and advisability of highlighting the check digit as an aid in locating it on the VIN plate. All commenters, whether manufacturer or VIN user, recommended that the check digit not be highlighted. The comments suggested that highlighting the check digit would increase cost to manufacturers and confusion among users without comparable advantages in check digit recognition. Consequently, the NHTSA has concluded that the check digit is sufficiently recognizable by its physical position in the VIN without being further highlighted.

Weight Increments For Vehicles With a Gross Vehicle Weight Rating Greater Than 10,000 Pounds

In the Notice of Proposed Rulemaking issued November 9, 1978, the Administration proposed that the weight rating data for vehicles with a gross vehicle weight rating greater than 10,000 pounds be delineated in 5,000 pound increments.

The Freightliner Corporation supported the amendment, stating that gross vehicle weight rating was an important statistical consideration. The Motor Vehicle Manufacturers Association and General Motors recommended that the GVWR not be required for vehicles with a GVWR over 10,000 pounds, as this information is contained on the certification label. The MVMA also questioned why this information is required for trucks with a GVWR of less than 10,000 pounds, but not for passenger cars. Ford Motor Co. commented similarly.

International Harvester (IH) also opposed the amendment because it would restrict IH's current VIN scheme and because the GVWR of incomplete vehicles is easily modified. Freightliner reached the opposite conclusion in its comment, stating that it is not economically feasible for drastic changes to be made in GVWR after initial manufacture. Paccar, Inc. did not oppose the proposal, but recommended instead that the classification system currently being used in the industry, which consists of eight weight rating classifications, be substituted. In this way, Paccar argues, GVWR information would be more relevant to manufacturers and easier for the manufacturer to encode.

As the agency pointed out in previous notices, highway safety research can be carried out utilizing the VIN appearing on accident reports even though the vehicle itself is not available. Consequently, the appearance of the GVWR on a vehicle's certification label is not a substitute for encoding the GVWR in the VIN. While GVWR does not indicate the actual load being carried by the vehicle, it is extremely useful in classifying the vehicle itself, particularly its size. After reviewing the comments received on this proposal, the agency has concluded GVWR information for trucks should be retained, since it facilitates analyzing differences in performance and accident experience of different size vehicles.

The agency is also persuaded by the argument of Paccar that institutionalizing the weight rating classification system currently being used in the industry would be equally useful and considerably less disruptive. For example, certain vehicle models fall within one weight rating class although they may fall within two GVWR categories utilizing the proposed system. The standard is, therefore, amended accordingly.

The requirement that GVWR be supplied for passenger cars was deleted because there were not enough codes to include that information in a fixed format system along with the other passenger car information considered more important by the agency. Information relating to the GVWR for light trucks was considered more important, as it represents not only a way of identifying and monitoring the vans and light trucks which are becoming an important element of the vehicle population as distinguished from heavy trucks, but also the weight makeup of that class. The NHTSA denies, therefore, petitions to eliminate the requirement for encoding the GVWR of trucks and multipurpose passenger vehicles with a GVWR of 10,000 pounds or less. However, to take account of the fact that there are fewer models of light trucks and to ease the burden on manufacturers, the number of GVWR weight categories is reduced to eight for vehicles with a GVWR of 10,000 pounds or less.

Also with respect to light trucks, the agency wishes to note that while it has not included a requirement that restraint type information be supplied for light trucks, it does intend to propose this requirement when it proposes passive restraint systems for those vehicles.

VIN Fixed Format

In the notice of proposed rulemaking published on November 9, 1978, the agency proposed further fixing the VIN format by specifying the alphabetic or numeric nature of the 4th, 5th, 6th, 7th, 11th, and 12th characters of the VIN for passenger cars, multipurpose passenger vehicles with a GVWR of 10,000 pounds or less, and trucks with a GVWR of 10,000 pounds or less. In making the proposal, the agency explored in detail the advantages and disadvantages of fixing the format. In summary, fixing the format will allow some types of VIN errors to be corrected when initially transcribed by clerks and others who can quickly become familiar with the established format. In addition, forms on which the VIN is transcribed can be designed to indicate whether a character should be alphabetic or numeric. However, fixing the VIN format will not eliminate the need for the check digit, will

lead to a reduction in the information-carrying capacity of the VIN, and will result in alterations to the VIN schemes which manufacturers now utilize.

Comments in response to the notice confirmed the NHTSA analysis of the matter. Specifically States supported the conclusions about the effect of expanding the fixed format on transcription error rate and the manufacturers supported the conclusions about the effect of the expansion on the information capacity of the VIN. Manufacturers commenting on the proposal were unanimous in their opposition. Chrysler predicted more costly and complex decoding. Toyo Kogyo concluded that a fixed format would end any hopes of continuing their system of specific information being encoded in specific positions. Volkswagen pointed to a major disruption in their current system, and questioned why further fixing the format was necessary as German clerks have achieved an error rate of approximately 1 percent without the format fixing.

Similar objections to those cited above were made by other manufacturers commenting.

In addition, Rolls-Royce Motors requested that if a format is to be fixed, all characters should be specified as alphabetic. In this way, Rolls-Royce, as a low volume manufacturer, could reflect changes in a vehicle without also having to change the actual model code. British Leyland Motors, Inc. also requested that the first four characters of the second section be alphabetic to provide for additional informational capacity. Toyota proposed that the fourth as well as the fifth characters of the second section not be fixed for the same reason.

The Motor Vehicle Manufacturers Association, Ford Motor Co., and International Harvester specifically objected to specifying for cars, light trucks, and light multipurpose vehicles that the 3rd character of the 3rd section (i.e., the 11th character of the VIN) of the VIN must be numeric. Their objections were based on the resulting substantial reduction in the number of unique manufacturer identifiers for manufacturers producing less than 500 vehicles per year which would be available in the third section. Also, several truck manufacturers pointed out that they utilized the 11th character of the VIN to represent the assembly line on which the truck was produced, and that they maintained more assembly lines than the number of numerical characters available.

The VESC/AAMVA, the States, and the insurance industry all supported the fixed format scheme, pointing to an anticipated lessening in the number of transcription errors as described by the agency in the NPRM.

The petitions requesting a flexible format or changes in the character specifications are denied except for those requesting that the 3rd character of the 3rd section be permitted to be either alphabetic or numeric. The agency recognizes that the use of a fixed format will result in a substantial reduction in the information carrying capacity of the VIN. However, the avoidance of transcription error remains the paramount concern. Nothing in the docket suggests that the administration was incorrect in its assumption that transcription errors will be reduced by the use of the fixed format system.

Fixing the format of the 3rd character of the 3rd section presents a more difficult choice. On one hand, fixing the format of this character as numeric will identify an error if an alphabetic character is substituted. However, since the preceding character is not specified as either numeric or alphabetic and the character following it is numeric, the opportunity to identify transpositions of these characters is limited. On the other hand, it seems possible that the number of manufacturers producing less than 500 passenger cars, multipurpose passenger vehicles or trucks with a GVWR of 10,000 pounds or less a year over the next 30 years will exceed the capacity of the VIN with the third character of the third section fixed. This is particularly true as the recreational use of these vehicles increases.

Further, the ability to locate the assembly line on which a defective vehicle is manufactured will have an important safety benefit. In cases involving manufacturing defects, this information will enable a determination of which of similar vehicles produced on different assembly lines need to be recalled. Consequently, the agency has determined not to adopt the proposed requirement that the 3rd character of the 3rd section of the VIN be numeric. In this way, a sufficient number

of manufacturer identifiers can be assured with the least disruption to the existing system used to identify trucks.

The VESC/AAMVA and several other commenters suggested that the NHTSA VIN system could be further improved by fixing the specific information required to be decoded from each position of the second section of the VIN. These petitions are denied. Fixing the information contained in each position of the second section of the VIN would have no effect on the accuracy of transcription of the VIN, since clerks and others could not easily memorize the myriad of characters manufacturers use to represent data contained in these positions. While the information contained in the second section would be more easily decipherable by those using a table if each position were specified, the amount of information which could be represented would be substantially decreased and the disruption to manufacturers substantially increased.

These problems were resolved by the VESC, after discussions with the manufacturers, by specifying the content of only one character of the second section in establishing the VESC VIN. With the NHTSA requirement for encodement of additional information beyond that required by the VESC, the agency concludes that specifying the informational content of each character in the second section is not practicable.

Although discussed comprehensively in previous notices, it should be noted again that the adoption of a fixed format only eliminates a particular class of VIN errors and in no way eliminates the need for the check digit. While the fixed format is able to identify those errors which result in an alphabetic character being substituted for a numeric character or vice versa, the check digit process will detect most erroneous characters regardless of type. Because vehicle owners are notified of recalls through their vehicle's VIN, it is essential that this information be retained in the most accurate fashion possible.

Check Digit Position

In the notice of proposed rulemaking issued on November 9, 1978, the agency proposed positioning the check digit immediately preceding the fourth position of the VIN in the interest of international harmonization and manufacturer ease of compliance. As the agency pointed out in the notice, the second section of the VIN system adopted by the ISO contains 6 characters. By having the check digit immediately precede or follow the second section, the five characters of the second section plus the check digit become the 6 characters necessary to assure compatibility with the ISO standard. If the check digit is positioned at either end of the VIN, the second section contains only 5 characters and the VIN is incompatible with the ISO system. However, specific comments were also requested concerning the advantages of placing the check digit at either end of the VIN.

Several States and the VESC/AAMVA submitted comments which supported placing the check digit at the beginning of the VIN.

In its comments, Maryland did not object to the check digit. It felt that the combination of fixed length, improved format, and the check digit routine will reduce transcription errors and provide an edit routine to ensure file integrity. However, Maryland also anticipated that some States would not be able to store a 16 character VIN. (For the purposes of comparison, it bears emphasis that the NHTSA VIN has 16 characters plus a check digit, the VESC VIN has 16 characters, and the ISO VIN has 17 characters.) These states would, in Maryland's view, eliminate prior to computer storage the check digit and perhaps a second character after producing a certificate of title. If the certificate of title were subsequently lost, there would be no record in the State files of a complete VIN, and the owner would have a great deal of trouble when transferring title to the vehicle.

In a similar situation, Maryland believes some States will choose to eliminate the check digit and a character of the VIN prior to producing the certificate of title, thereby creating a defective title which another State could refuse to honor. Indeed, Maryland considers this problem so serious that it believes a uniform system of dropping characters from the VIN is a certainty if additional Federal funds are not available to pay for additional State VIN storage capacity.

From this state of affairs, Maryland concludes that placing the check digit to the left or right of the VIN would encourage the check digit to

be dropped in the inevitable uniform system of dropping VIN characters.

The NHTSA does not concur in this analysis. Since the States have supported in their comments to the docket the 16 character VESC VIN, the agency assumes they are willing to store this number of characters and that they would have developed the capacity necessary for that purpose even in the absence of the NHTSA VIN. If a State desires to drop the check digit, rather than store it, the State can do so irrespective of its position in the VIN either by appropriate data processing techniques or by simple and proper design of the forms on which the VIN is transcribed.

As Maryland points out in its comment, and as the agency has pointed out in previous notices, the NHTSA does not regulate the States in regard to the VIN. Thus, the NHTSA cannot require the State to store or use the check digit. The agency is confident, however, that States will seek to facilitate their citizens being made aware of potential safety defects and noncompliances in their vehicles and to simply their task in transferring their vehicles. Consequently, the agency believes they will utilize the simple data processing procedure for eliminating the check digit if they chose not to store it. The State comments to the docket would indicate, however, that all six are planning to store the 16 character VIN and the check digit.

The Vehicle Equipment Safety Commission and the American Association of Motor Vehicle Administrators (VESC/AAMVA) also responded jointly on December 11, 1978 to the notice of proposed rulemaking. In addition, certain aspects of their submission were supplemented by the VESC on December 29, 1978, as the result of NHTSA questions about the basis for their submission, and this supplement has also been placed in the docket (01–22–NPRM–No. 7–41).

The VESC/AAMVA comment of December 11, 1978, maintained that from 35–37 States are currently incapable of "inputting" 17 characters into their vehicle identification files. In its supplementary docket submissions, the VESC stated that it was unable at that time to submit a list identify those States which could not input 17 characters. The VESC also explained that while in most instances State capability could be expanded by reprogramming and the purchase of additional equipment, this would be very expensive.

Like Maryland, the VESC/AAMVA concluded that those States which are unable to currently input 17 characters for lack of equipment and appropriate programming will choose to drop at a minimum the check digit. This will create, in the view of the VESC/AAMVA, lack of uniformity, confusion, and a regenerated check digit based on the State's computation which will differ from the manufacturer-assigned cheeck digit. To place the check digit anywhere but the beginning or the end of the VIN, in the view of the VESC/AAMVA, would create "unacceptable data handling and data regeneration problems." Therefore, the VESC/AAMVA concluded that the check digit must be dropped entirely or moved to the left of the VIN.

In its supplement, the VESC/AAMVA explained that the data handling problems referred to were "incorrect inputs" into the computer because State personnel would drop by mistake a character which was not the check digit while transmitting the VIN. Further, problems would occur due to the inconsistency between States which have a 16 character VIN capacity and States which have a 17 character VIN capacity.

The VESC/AAMVA also maintained that the cost burden to the States to comply with the NHTSA standard would be substantial. Vermont, the only State whose cost VESC cited with confidence, projected a cost of $250,000 to implement the NHTSA VIN system and a 2 to 3 year completion date. The VESC/AAMVA reported that Vermont has only 380,000 vehicles and limited on-line computer time. Consequently, the cost for a State with more sophisticated computer equipment would be considerably higher in the VESC/AAMVA view. Vermont also advised the VESC/AAMVA that only a negligible amount of Federal funds would be available to carry out the changeover.

The VESC/AAMVA stated that specific cost data from the other States was not available, but the cost to the States of Illinois, Michigan, and New York would be materially higher than Vermont, and that Massachusetts was projecting a

VIN changeover cost of from $300,000 to $400,000. In the case of Massachusetts, it is not clear whether this represents the changeover cost to convert to the VESC VIN or NHTSA VIN.

In its supplement, the VESC/AAMVA was unable to provide at that time further data on these cost figures for the NHTSA VIN.

The VESC/AAMVA also attacked the rationale of the agency in placing the check digit within the VIN structure. In the view of the VESC/AAMVA, the practical effect of that placement is mandating the recording and storage of a 17 character VIN. The VESC/AAMVA concludes that the NHTSA must either drop the check digit or place it outside the VIN structure.

Of particular concern to the VESC/AAMVA is the difficulty they suggest will be encountered in instructing a title clerk or police officer to drop the check digit in an internal position rather than in the first or last position. In its supplement, the VESC/AAMVA agreed with the agency that a computer can be programmed to drop any character in the VIN or the check digit and forms can be designed to indicate the check digit just as easily as they can be designed to show whether a character should be alphabetic or numeric. However, the VESC/AAMVA still believes strongly that a serious problem would exist if State personnel drop the check digit prior to transcription on a form or entry into a computer. Further, the VESC/AAMVA believes it impossible to design a form which signified the check digit for every intended use of the VIN.

The key question raised by the VESC/AAMVA relates to the ability of the States to deal with a 16 character VIN with an internal check digit. This issue was also of concern to the NHTSA. A review of the comments to the docket from the six States directly responding suggests that the problem is not as severe as the VESC/AAMVA believes, however.

Unfortunately, only three of these States submitted cost data to the docket, and the VESC/AAMVA was unable to submit data relating to their conclusions. Further, as noted above, the agency has not received information from the VESC/AAMVA concerning the additional cost of implementing the NHTSA VIN system as compared to the cost of implementing the 16 character VIN system proposed by the VESC.

Oregon estimated its cost to implement the NHTSA VIN system at $17,650 for reprogramming. Vermont estimated its costs at $250,000, of which $180,000 would be for systems analysis and programming and $70,000 would be for public relations, training, and redesigning forms. Washington State estimated its costs for implementing the NHTSA VIN system at $36,000 the first year for reprogramming, equipment, and key punching, and $25,000 each subsequent year for equipment and key punching.

The agency does not understand why the changeover costs of Vermont are approximately 10 times higher than the two other States submitting cost data. The agency notes, too, that the motor vehicle population of Vermont is approximately one-eighth that of Washington and one-fifth that of Oregon. The cost of adopting either the NHTSA VIN system or VESC VIN system should be approximately equivalent and should consist primarily in reprogramming and procuring additional computer data storage units, and these costs should be in some degree proportional to the vehicle population. The agency does note, however, that Vermont's highway safety annual work program for this fiscal year includes spending $280,000 to implement a R. L. Polk computer program to check for valid VIN's. Since this R. L. Polk program will be outdated with the promulgation of the NHTSA standard, the agency hopes that Vermont's implementation of the NHTSA VIN system can be consolidated with the implementation of a revised VIN edit routine, thus achieving some savings for Vermont.

Based on the agency's assessment of implementation costs and on the actual cost data submitted to the docket, the NHTSA concludes that the cost to be incurred by the States to implement the NHTSA VIN system will not be so significant as the VESC/AAMVA comments suggested. As explained previously, the primary costs to the States of implementing the NHTSA system would be those of reprogramming and of purchasing additional data storage equipment.

The agency's conclusion about lack of substantial cost is further supported when one considers that the members of the VESC adopted and the

States supported the VESC 16 character VIN system. Presumably, the States were prepared to adopt it. Thus, the cost burden which the NHTSA regarded as particularly important to the States is the incremental cost of the NHTSA VIN system over the VESC VIN scheme. In the case of Oregon, the cost differential between the NHTSA and VESC VIN systems would be negligible, as only reprogramming is required and the effort needed to reprogram for 17 characters, either stored or dropped prior to storage and then regenerated, would not be substantially more than it would be for 16 characters. In the case of Washington, the State itself estimates the added cost of the NHTSA system over the VESC system would be $2,500 annually for keypunching the added character.

The agency remains convinced that the States will seek methods of simplifying and standardizing titling and other procedures involving the VIN. All parties appear to agree that by proper design of forms and relatively simple programming of computers, the check digit may be eliminated from any location within the VIN should a State choose to do so. It appears all agree, also, that the appropriate check digit may be regenerated when the VIN is removed from data storage and printed. What the VESC/AAMVA and Maryland appear to fear, however, is that police officers, clerks, and others will attempt to locate and eliminate the check digit in the process of transcribing the VIN. Why persons would be instructed to drop the check digit has not been suggested, however. Further, simple instructions should prevent that from occurring. Accordingly, premature dropping of the check digit is clearly avoidable. The agency is impressed that none of the States directly submitting comments to the docket have suggested that it does not intend to store the check digit along with the VIN.

The VESC/AAMVA has incorrectly evaluated the practical effect of placing the check digit within the VIN. The placement of the check digit within the VIN does not necessitate the storage of the check digit. Further, as the agency expressly explained in the previous notice and above, the choice was made to allow the VIN mandated by the NHTSA to be compatible with the VIN mandated by the ISO. In this way, manufacturers could use the same VIN structure on vehicles marketed in the United States and those marketed outside the country. The international harmonization of the NHTSA VIN Standard is not only consistent with United States policy in this area as articulated by the President (14 Weekly Comp. of Pres. Doc. 1630), but eases substantially the regulatory burden on manufacturers producing vehicles for both the United States and foreign markets since they need not maintain two separate VIN systems. If the VESC VIN scheme was adopted, manufacturers would face the added cost of maintaining one VIN system for the United States and another VIN system for the rest of the world.

Comments were also received on the question of the check digit position from a number of insurance companies and insurance industry groups. Nationwide Insurance stated that the location of the check digit within the VIN should not present any problem to VIN users since sophisticated procedures were not necessary to manage the check digit regardless of its position. Further, the use of the check digit caused Nationwide no great concern. The Alliance of American Insurers believed some users would prefer the check digit be placed outside the VIN, but stated that "ideally" the check digit should be retained as an integral part of the VIN. State Farm Insurance Co. stated that it intended to store the check digit, but suggested it should be positioned at the beginning or end of the VIN in the interest of allowing it to be dropped more easily by users who did not intend to store it. State Farm did not explain how the ease of dropping the check digit varied with its position. Allstate Insurance Co. supported the use of the check digit, and recommended that it be made an internal part of the VIN. Finally, the Insurance Institute for Highway Safety strongly supported making the check digit an internal part of the VIN.

No manufacturer supported moving the check digit to the first or last position of the VIN, but there was a difference of opinion among the manufacturers whether the check digit should precede or follow the second section of the VIN.

Volkswagen and British Leyland supported

placing the check digit immediately preceding the second section of the VIN, as this would make the VIN more compatible with the European VIN system. General Motors and American Motors supported the check digit in this same position, as this seemed to foster international harmonization. International Harvester supported the check digit in this position, as this would be least disruptive to its current system. While not commenting to this docket on the issue, Mercedes-Benz and BMW supported in their petitions for reconsideration of the August 18, 1978 rule placing the check digit immediately preceding the second section. Mercedes supported this position because it would cause the least disruption to its current system. BMW supported this position because the check digit would then not separate the two flexible sections of the VIN, thus allowing the establishment of a VIN "management system".

Harley-Davidson, Toyo-Kogyo, Chrysler, and Peugeot-Renault supported the check digit immediately following the second section, as this separated the fixed section of the VIN from the variable section of the VIN. Rolls-Royce supported the check digit in this position, as it has already begun work on a system which would position it there.

Ford and the Motor Vehicle Manufacturers Association took no position on whether the check digit should precede or follow the second section so long as it was in one of those two positions.

In its notice of proposed rulemaking published on November 9, 1978, the agency relocated the check digit to a position preceding the second section of the VIN in the interest of ease of compliance for those manufacturers who desired to use a different system in Europe than they did in the U.S. It seems, however, that the manufacturers are unable to agree upon which position actually is preferable. The agency must therefore determine which position makes more practical sense.

The agency concludes that the check digit should be placed in immediate proximity to characters which are variable. While only some manufacturers may have to change manufacturer identifiers if they produce more than one type of vehicle, all must change the final eight characters of the VIN. Consequently, the agency concludes that the check digit should precede these final eight characters since it too is variable. Thus, many manufacturers will be able to prepare their VIN plates with the first part of the VIN prestamped. This will lower costs and aid in preventing alterations since these characters can be molded as part of the plate.

Some manufacturers and manufacturer associations also petitioned to eliminate the check digit entirely. The agency's rationale for the check digit and its utility in eliminating error have been comprehensively reviewed in previous notices. In summary, the check digit offers the most effective way known to the agency to determine erroneously recorded VINs prior to storage in motor vehicle files.

Peugeot-Renault raised in their comment a new issue of international harmonization. In the view of Peugeot-Renault, the ISO standard requires that the middle section of the VIN remain the same for all vehicles of the same description. After a review of the ISO standard, the NHTSA cannot agree with this view. ISO Standard 3779 specifically provides that if not all the characters in the second section of the VIN are used for descriptive purposes, the manufacturer may fill the section with another character for which there are no restrictions.

Optional Early Compliance

The NPRM proposed that compliance with all aspects of the amended standard be permitted beginning September 1, 1979, for passenger cars and be required for all vehicles beginning September 1, 1980. Optional early compliance was proposed because the agency concluded that some manufacturers could fully implement the amended standard before September 1, 1980, and because the agency was concerned that implementation of the amended standard might be complicated by the State of Maryland's proposal to implement an inconsistent VIN system on January 1, 1980. Express authorization of early compliance would have put the amended standard into effect on September 1, 1979, and removed any question about the preemption of State standards governing VIN format and content.

The agency has since learned that the State of Maryland has formally proposed to change its

implementation date to September 1, 1980. If that new proposal is adopted, the need for express authorization for early compliance with the amended NHTSA standard will be eliminated. Based on indications that the proposal will be adopted, the agency has decided to delete the express provision for early compliance. It should be clearly understood, however, that this deletion does not preclude early compliance with most aspects of the amended standard. Except to the extent that it is not possible for a manufacturer to comply simultaneously with an existing and future version of a Federal Motor Vehicle Safety Standard, early compliance is always permissible.

Effective Date

A number of commenters requested that the effective date be postponed to allow for acquiring equipment and for system development. Mack Truck requested that the effective date be postponed until two years from the issuance of the final rule. Volkswagen requested that the effective date be 18 months from the publication of the final rule. International Harvester opposed the September 1, 1980 effective date as not practicable, but did not suggest an alternative effective date. BMW recommended an effective date 3 years after the standard is issued. The VESC/AAMVA suggested an effective date two to three years after the standard is finalized. The State of Vermont proposes an effective date of September 1, 1981, or September 1, 1982, because its computer programming effort is committed for the next 1½ years.

The agency is unconvinced that the effective date of the standard should be changed. While the final details of the proposal were not known until today, the necessity of implementing a new VIN system and most of its essential features have been known at least since the August 1978 final rule.

With an effective date eighteen months in the future, the desires of Volkswagen have been met and the stated needs of Mack substantially met. While BMW and International Harvester believe they need more time to comply, they have presented no evidence in their comments that their systems development, reprogramming, and marking equipment installation cannot be accomplished within the specified time frame. Further, BMW must comply prior to September 1, 1980 with the compatible ISO standard, and presumably can comply with the NHTSA standard shortly thereafter. IH has stated that its inability to comply comes from the need to derive a new coding system. The agency believes 18 months will be sufficient for this purpose, as it is for the other manufacturers.

From the comments, it appears that California, Oregon, and Washington can comply with a January 1, 1980 effective date, and Maryland can prior to that date comply with a 16 character VIN requirement.

Of the States commenting, only Vermont believes it can not comply by September 1, 1980. Since Vermont's time problem rests with a prior 1½ year programming commitment rather than the 6–18 months the State considers necessary to implement the NHTSA VIN system, it is hoped that Vermont's revision of the now outdated R. L. Polk VIN verification program planned for this fiscal year can be combined with the reprogramming necessary to implement the NHTSA VIN system.

The VESC/AAMVA objected to the effective date on behalf of the States. The agency notes, however, that a 16 character VIN was adopted by the VESC in July 1977. Thus, the States were aware on that date that a 16 character VIN would be implemented shortly. Further, Maryland, by requiring passenger cars sold in that State after January 1, 1980, to have a 16 character VIN made it highly likely that manufacturers would adopt a 16 character VIN system by that date. (It should be noted that Maryland on February 9, 1979, proposed that its standard should take effect on September 1, 1980. This is the proposed effective date for the NHTSA standard). Manufacturers in all probability would not utilize one system for Maryland and another for the other States. The intent of Maryland to require manufacturers to comply with its VIN standard on September 1, 1980, whether or not the NHTSA extended the effective date of its standard, was confirmed on February 22, 1979 (Docket 01–22–No. 7–042). Consequently, any action of NHTSA to extend its effective date would not aid the States in view of Maryland's position.

The NHTSA concludes, therefore, that all States should have been prepared to deal with a 16 character VIN six months prior to the effective date of the NHTSA standard. This view is further supported by the comments of the States throughout this rulemaking effort which strongly supported the adoption of the VESC 16 character VIN scheme. Since the elimination of the check digit prior to storage is a reasonably simple task, the agency concludes the States will be able to deal with NHTSA-mandated VINs by the time the standard takes effect. The agency is also certain that the coordinative efforts of the AAMVA will aid the States in dealing with the NHTSA VIN system by the time the manufacturers comply with the standard. The agency too stands ready to provide technical assistance if any should be needed.

Therefore, petitions to change the effective date of the standard are denied.

Notice of Change in Encoded Data

The VESC/AAMVA and several States once again raised the issue of S6 of the standard which requires manufacturers to notify the NHTSA 60 days before changing the information decipherable from a particular VIN. It is the view of the VESC/AAMVA that requiring the manufacturers to submit this information to NHTSA will indirectly result in their not submitting it to the States.

This issue was discussed in the amendments to the rule published on November 9, 1978. The NHTSA is unable to understand why the manufacturers who voluntarily have been submitting material to the States since 1901 would suddenly cease doing so. The subsequent VESC submission to the docket does not explain the basis for its concern. In the unlikely event that the manufacturers cease to supply this data to the States, the NHTSA will entertain a petition for rulemaking from the States to institutionalize a requirement for the submission of that data to the States. Section S6.3 is amended, however, to require that all the information required to be submitted to the NHTSA shall be submitted at least 60 days before affixing the VIN utilizing the encoded information. This amendment is made to remedy an ambiguity in the standard as presently written.

Use of a Hand Held Calculator

In the final rule issued August 17, 1978, (43 FR 36448) the agency stated its belief that check digits could be calculated by using inexpensive, hand held calculators. The agency was not referring to the type of calculator currently available over the counter, but a calculator preprogrammed to carry out the check digit procedure when the VIN itself was keyed in. With the adoption of the fixed format as an aid in avoiding transcription errors, however, check digit calculations in the field are unlikely. Therefore, the availability of a preprogrammed calculator is no longer of concern to the agency.

The VESC/AAMVA also points out that the check digit system is not infallible since the same numerical value is assigned to three or four characters. For example, "D", "M", "U", and "4" are all assigned the numerical value "4" in the check digit procedure. The odds that one of these characters will be erroneously substituted for the other resulting in the correct check digit is only one in eleven, however. Consequently, the check digit procedure will reduce the number of incorrect VINs in computer files by more than 90 percent.

Manufacturer Identifier for Manufacturers Producing Less Than 500 Vehicles of Any One Type Annually

S4.5.1 of the standard provides a special procedure for assigning the manufacturer identifier to manufacturers who produce less than 500 motor vehicles of a type annually. In this procedure, the third character of the VIN is the number 9 and the eleventh, twelfth, and thirteenth characters of the VIN along with the first three characters represent the manufacturer identifier. The VESC/AAMVA objects to this provision as complicated to process by computer and suggests it should be eliminated.

This provision was adopted because the agency was unable to ascertain with certainty that there is a sufficient number of three character identifiers to uniquely represent all vehicle manufacturers, makes, and types over the next thirty years, the cycle of the amended standard. In addition, this method of identification is identical with the method adopted by the ISO, and its inclusion in the NHTSA standard would be a

further step in the direction of international harmonization.

The agency is unconvinced that the problems expressed by the VESC/AAMVA are substantial. The occurrence of a VIN from a manufacturer of less than 500 vehicles of a type in any State's vehicle population will be rare. As the VIN format for a manufacturer of less than 500 vehicles of a type is the same as that for all other manufacturers, there should be no impediment to entering it into storage. The need to generate the name of the manufacturer from the data base, the situation where specific programming will be called for, will be even rarer. Against the arguments of the VESC/AAMVA, the integrity of the VIN system over thirty years and the interests of reducing compliance costs through international harmonization must prevail.

Reconstructed Vehicle VIN

The VESC/AAMVA and the State of Vermont again raise the issue of assigning a VIN to reconstructed vehicles. As was pointed out in the amendment to the rule published on November 9, 1978, amended Standard No. 115 only applies to reconstructed vehicles if the chassis is new. Evidently, the VESC/AAMVA and Vermont interpreted this to mean that the VIN of the original chassis should be assigned to the reconstructed vehicle. This is only true if the chassis is new, in which case the vehicle would be one manufactured in more than one stage and the incomplete vehicle manufacturer would assign the VIN.

The VIN for the homemade vehicles which Vermont apparently refers to would be assigned by Vermont, as it sees fit. Presumably, a reconstructed vehicle VIN scheme which was compatible with the NHTSA VIN system could be created, but such a scheme would not be within the ambit of Standard No. 115.

Assignment of Manufacturer Identifiers

Saab-Scania has requested further information concerning the assignment of manufacturer identifiers. When the final rule was issued, the Society of Automotive Engineers (SAE) immediately submitted on behalf of many domestic and foreign manufacturers a list of approximately five hundred identifiers. They have been registered to the manufacturers to whom they were assigned. Because the SAE has progressed so far in its assignment process, the agency is discussing with the SAE its assigning manufacturer identifiers on behalf of and under the authority of the NHTSA. A notice will appear in the Federal Register when this matter is resolved.

Public Meeting

The VESC/AAMVA stated that the agency had not followed through on its announcement in the advance notice of proposed rulemaking that it anticipated a public meeting for oral submission of comments concerning VINs. At the outset, the agency did contemplate the possibility of a public meeting to supplement the opportunity for written comment. Holding a meeting proved unnecessary, however. Substantial written public comments have been received in response to the agency's five notices. Comments received from the AAMVA and VESC are a good example of the comments received and their completeness in responding to the involved issues. For example, in response to the advance notice of proposed rulemaking, the AAMVA submitted not only staff comments, but also supplementary material from 50 States and the District of Columbia. Similarly, extensive comments were also submitted in response to the notice of proposed rulemaking.

The agency also notes that a public meeting concerning the VIN was held under the aegis of NHTSA's National Highway Safety Advisory Committee on March 21, 1978, in which the VESC and AAMVA participated. This meeting resulted in 61 pages of testimony and 110 pages of supplementary material. Further, meetings were held between the NHTSA and VESC and AAMVA personnel on September 21, 1977 (Docket 01–22–No. 3–92), November 4, 1977 (Docket 01–22–No. 3–93), and November 18, 1977 (Docket 01–22–No. 3–94).

Plant of Manufacture

BMW petitioned the agency to delete the requirement for encoding plant of manufacture, since it currently utilizes a seven digit production sequence number, the first character of which would occupy the space required to be occupied by the character designating the plant of manu-

facture. A system which would have allowed BMW to maintain a seven character sequential number was proposed in the notice of proposed rulemaking published on January 16, 1978 (43 FR 2189), but withdrawn in the face of criticism that it was too complex. BMW suggests no reason which would cause the agency to reopen the issue, and its petition is denied. The agency notes, however, that the rule does not restrict a manufacturer from submitting more than one character to represent a single plant. Consequently, a sophisticated allotment of sequential blocks might be sufficient to allow BMW to maintain its seven digit production sequence numbering system.

Meaning of Definition of "Chassis"

In the amendment issued on November 9, 1978 the agency clarified the meaning of the term "chassis" to at least discriminate between a truck and a truck-tractor. Ford has requested that this clarification be rescinded, as the 2 percent of its heavy truck chassis which are not sold as incomplete vehicles are completed at a later date under contract to Ford. When Ford assigns the VIN, it states it does not know the final form of the vehicle. To the extent Ford does not know the final form of the vehicle when it assigns the VIN, the chassis information need not discriminate between truck and truck-tractor.

Trailer VIN's

The Truck Trailer Manufacturers Association (TTMA) petitioned to delete the requirement that descriptive information concerning trailers be encoded in the second section of the VIN. The TTMA believes that this information will be of little use in defect and noncompliance recall campaigns. Further, the TTMA asked for specific examples of how this information would be useful in accident investigation. By deleting this requirement, the TTMA argues, the second section of a trailer VIN could consist of "0" or some other "neutral" character, thus reducing paperwork requirements and easing compliance for the smaller manufacturers.

The TTMA petition is denied. Trailers can be as different as a five foot, single axle, 500 pound GVWR platform trailer and a forty foot, multi-axle, refrigerated van of 40,000 pounds GVWR. The need to discriminate between these vehicles in accident investigation and research is apparent.

However, it should also be noted that the standard does not require that each character of the second section of the VIN reflect information, only that the second section as a whole reflect the required information. For example, if a small manufacturer produces 33 or less models which can be differentiated on the basis of the descriptive characteristics set forth in the standard, only one position in the second section of the VIN is needed to carry this information and the other four positions can be "0".

VIN Litigation

On January 8, 1979, the VESC and the State of Maryland filed with the U.S. Court of Appeals for the Fourth Circuit a petition for review of Standard No. 115. As required under Section 105 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1394), the agency has filed with the Court the record of the rulemaking proceeding prior to this amendment. To facilitate public review of the material which the agency included in the record, publicly available documents not previously submitted to the docket but cited in the rulemaking notices have been placed in a general reference section for this notice.

The principal authors of this notice are Nelson Erickson of the Office of Vehicle Safety Standards, Crash Avoidance Division and Frederic Schwartz, Jr., of the Office of Chief Counsel.

In consideration of the foregoing, Standard No. 115, 49 CFR 571.115, is revised . . . .

(Secs. 103, 112, 119 Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1401, 1407); delegation of authority at 49 CFR 1.50.)

Issued on March 15, 1979.

Joan Claybrook
Administrator

44 F.R. 17489–17498
March 22, 1979

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 115

Vehicle Identification Number

(Docket No. 1-22; Notice 10)

ACTION: Response to petitions for reconsideration and rulemaking.

SUMMARY: This notice responds to a petition for reconsideration of the March 22, 1979, notice amending Federal Motor Vehicle Safety Standard No. 115, Vehicle Identification Number and to several petitions for rulemaking to amend the standard. The requests in the reconsideration petition to eliminate the fixed format required of vehicle identification numbers (VINs) for certain vehicle types and to place the check digit after the 3rd character of the VIN are denied. A rulemaking petition request to extend the date by which unique manufacturer identifiers must be reported to the agency is granted. Rulemaking petitions to postpone the standard's effective date for vehicles whose model year changeover date is subsequent to September 1, 1980, are granted in part. Requests for an interpretation permitting slight variations between actual engine horsepower and that encoded in the VIN are also answered. The effect of these amendments is to facilitate in various minor ways the manufacturer's implementation of the revised VIN.

DATES: The effective date of the standard is revised as follows: September 1, 1980, for manufacturers whose 1981 model year changeover date falls prior to September 2, 1980, or subsequent to January 1, 1981.

The manufacturer's 1981 model year changeover date for manufacturers whose changeover date for that year occurs between September 1, 1980, and January 2, 1981.

SUPPLEMENTARY INFORMATION: On March 22, 1979, the National Highway Traffic Safety Administration published a notice amending Federal Motor Vehicle Safety Standard No. 115, Vehicle Identification Number (44 FR 17489). One petition for reconsideration of the amended rule and several petitions for rulemaking to amend the rule further were received.

The vehicle identification number (VIN) is a series of 16 letters and numbers which serves as the unique identifier for motor vehicles manufactured in or imported into the United States. Along with its ability to uniquely identify a vehicle, the VIN can be decoded to provide substantial information about the vehicle such as its manufacturer, model, and gross vehicle weight rating. The VIN is assigned in conjunction with a check digit, which follows its 8th character. The check digit is the result of a mathematical process utilizing the characters of the VIN, and is used to detect errors in the transcription of the VIN from a vehicle to a written record or from record to record.

The many uses and users of the VIN have been described in detail in previous notices. In summary, the VIN is used as the key vehicle identifier by the NHTSA, manufacturers, insurance companies, and agencies of State governments. It is the keystone of vehicle recall campaigns, and is of great importance in safety research. It also has many other uses such as vehicle titling and recovery of stolen vehicles.

VIN Fixed Format

Sections 4.5.2 and 4.5.3 of Standard No. 115 specify the alphabetic or numeric nature of the characters occupying six positions in the VIN affixed to passenger cars and to multipurpose

passenger vehicles and trucks with a GVWR of 10,000 pounds or less. The 4th and 5th characters are required to be alphabetic and the 6th, 7th, 11th and 12th characters are required to be numeric. The process of specifying the alphabetic or numeric nature of certain characters is called fixing the format, and is utilized to facilitate the recognition by clerks and others of errors in transcribed VINs at the earliest possible moment. For example, the appearance of an alphabetic character in the 7th position of a VIN with a fixed format would be a clear indication of a transcription error.

Volkswagen of America (Volkswagen) submitted a petition for reconsideration requesting the agency to delete the fixed format requirements for the VIN. In support of its position, Volkswagen points out, as it has in response to previous notices, that a fixed format is only useful when the error in transcription involves the substitution of the wrong type of character, i.e., alphabetic for numeric or vice versa. Substitution of erroneous characters of the same type, e.g., a "7" for a "9", would not be discovered. Likewise, Volkswagen points out that fixing the format for only lightweight trucks and lightweight multipurpose passenger vehicles results in confusion unless the weight of the vehicle is known. Volkswagen believes this occurs because some trucks and multipurpose passenger vehicles will have a fixed format (10,000 pounds GVWR or less) and others will not have a fixed format (more than 10,000 pounds GVWR). Thus, a "4" in the 4th position of a truck of 8,000 pounds GVWR would indicate an error, but the same number in the same position for a truck of 18,000 pounds GVWR might not represent an error. Finally, Volkswagen states that placing the check digit following the 8th character rather than the 3rd character as proposed in Notice 7 (43 FR 52268) limits the use of the 2nd and 3rd sections of the VIN as one informational unit, further restricting its utility. Volkswagen requested, therefore, that the check digit be placed after the 3rd character.

As the NHTSA explained in Notice 7 (43 FR 52258) and Notice 8 (44 FR 17489), the use of the check digit process identifies almost all VIN transcription errors. Nonetheless, the use of the check digit also requires a mechanical processor of some kind; the mathematical steps cannot be carried out in an individual's head. An important segment of VIN users, particularly motor vehicle administrators and the insurance industry, believe it important that some process exist which will allow clerks and others at the time of entry of the VIN into the data processing system to check with the individual providing the VIN if an error has been made in transcription. Without this ability, a State agency receiving an erroneous VIN would be faced with having to take the time and trouble to locate and contact the individual who provided the VIN instead of being able to consult with the individual on the spot and correct the error. The Agency adopted the fixed format to meet this need, although it acknowledges that few errors will be discovered which could not be discovered at a later stage by utilizing the check digit procedure. Volkswagen has presented no information which would alter the agency's determination in this regard.

The Agency has concluded that the usefulness of the fixed format system will not be compromised by mandating its use only for those trucks and miltipurpose passenger vehicles whose GVWR is 10,000 pounds GVWR or less. The number of erroneous transcriptions for trucks and multipurpose passenger vehicles of more than 10,000 pounds GVWR should be small, as these vehicles do not make up a substantial portion of the vehicle population. Should any confusion arise, either the supplementary information submitted on the form along with the VIN or a direct question to the still-available transcriber would resolve the matter.

The NHTSA has also denied Volkswagen's petition concerning check digit location. While placing the check digit after the 8th character does separate the second and third sections of the VIN, it is clear that the third section changes with each vehicle since this section contains the vehicle's sequential number. The first and second sections, however, remain constant among large numbers of vehicles since they reflect general characteristics. Consequently, the agency reaffirms its conclusions that the check digit should follow the 8th character to maintain the integrity of the first and second sections of the VIN and to allow for the prestamping of those sections when appropriate.

Effective Date

The Recreational Vehicle Industry Association (RVIA) submitted a petition for rulemaking on

August 16, 1979, requesting a 3-month extension of the date by which manufacturers must submit unique identifiers to the agency. The date established by the March 22, 1979, notice for submission of the identifiers was September 1, 1979. RVIA based its petition on the reported confusion of some of its members concerning the unique identifiers and on its then recent learning that NHTSA had awarded a contract to the Society of Automotive Engineers to act as the agency's agent in acknowledging and/or assigning unique identifiers to manufacturers.

To ensure widespread public knowledge and understanding of the SAE contract and the SAE's role in the assigning of manufacturer identifiers, the agency published a notice announcing the contract in the *Federal Register* (44 FR 52783; September 10, 1979). In particular, the notice stated that:

The SAE is the assigner of World Manufacturer Identifiers on behalf of the International Standards Organization. As such, it has assigned more than 700 three character identifiers to motor vehicle manufacturers. These identifiers have been submitted to the NHTSA pursuant to S4.5.1 and S6.1. In assigning these identifiers, the SAE has gained considerable experience in the process of manufacturer identification. For this reason, the agency has determined that it would be more efficient and effective to contract with the SAE to act as its agent in acknowledging and/or assigning manufacturer identifiers to the remaining vehicle manufacturers.

All requests for the manufacturer identifiers should be forwarded directly to: Society of Automotive Engineers, 400 Commonwealth Avenue, Warrendale, Pennsylvania 15096, Attention: Leo Ziegler.

Manufacturer identifiers will be supplied at no charge. Manufacturers need not request a particular identifier. Requests for the assignment of specific identifiers can be forwarded to the SAE, however, and these identifiers will be assigned by SAE if they do not conflict with an identifier already reserved. Identifiers supplied directly to the agency by manufacturers have been forwarded to the SAE.

Manufacturer identifiers assigned by the SAE need not be submitted to the NHTSA. The NHTSA, of course, retains final authority over the assignment process, and any questions should be referred to the agency.

The agency has decided to change the deadline for submission of the manufacturer identifiers from September 1, 1979, to February 24, 1980, to ensure that all manufacturers have sufficient time to work with the SAE in the selection and submission of their identifiers. In making this change, a major consideration of the agency is that the change has no effect on the implementation of the revised VIN for the 1981 model year. Since this change relieves a restriction and does not adversely affect parties which will utilize the revised VIN, the agency has determined that notice and comment are not necessary.

Fruehauf Corporation (Fruehauf) and Rolls-Royce Motors International (Rolls-Royce) have submitted petitions for rulemaking to amend Standard No. 115 by extending the effective date. Rolls-Royce has requested that it not be required to affix the VIN mandated by the standard until its model year changeover date which will occur prior to January 1, 1981, and subsequent to the current effective date of September 1, 1980. Fruehauf has requested that the effective date be made January 1, 1981, as that is its model year changeover date.

Both manufacturers present a number of financial and technical arguments in support of their petition. Fruehauf faces a particular problem in this regard, as the firm is currently installing a new computer system. Since orders for heavy trucks are now being accepted for delivery after September 1, 1980, the company will be obligated to assign to each of these vehicles the current 9 character VIN and the 16 character plus check digit VIN required by Standard No. 115. This will also require either programming the new computer to manipulate both a 9 and 17 character VIN, or maintaining the old computer system in parallel with the new system for three additional months. Regardless of the technical method chosen to solve this problem, Fruehauf will also incur the cost of training its personnel to deal with the dual system. Fruehauf estimates its cost associated with this problem to be $231,000.

Fruehauf also argues that use of two VIN systems during the same model year gives rise to a number of physical and logistical problems. If two systems are to be used, it must determine if a vehicle when ordered is to be produced prior to

September 1, 1980 (in which case it would be assigned a 9 character VIN), between September 1, 1980 and January 1, 1981 (in which case it would be assigned both a 9 character VIN and a 17 character VIN), or after January 1, 1981 (in which case it would be assigned a 17 character VIN). Delays or alterations in the manufacturing sequence could cause substantial complications. Since the VIN is used for a number of purposes during the manufacturing process, intracompany forms would also have to be redesigned to indicate both VINs. Further, customer invoices and manufacturing documentations would have to utilize the 17 character VIN, but internal cost, accounting and recordkeeping would have to utilize the 9 character VIN.

The petition of Rolls-Royce articulated similar problems. Of particular concern to Rolls-Royce were problems involving recordkeeping, service reporting, production and general confusion arising from the need to alert personnel to the changes and use of the two different VIN systems for the same model year.

The agency has concluded that these petitions should be granted, to the extent described below. The initial effective date of September 1, 1980, for Standard No. 115 was chosen by the agency because this is the model year changeover date for most vehicles manufactured in the United States. The agency considers it extremely important that this date not be delayed to avoid the problems inherent in effecting a new VIN system in the midst of a model year.

For this very reason, however, the agency is concerned that the use of two entirely different VIN systems by some manufacturers for the same model year will result not only in the problems suggested in the Fruehauf and Rolls-Royce petitions, but also will give rise to confusion in recall campaigns and other areas. Likewise, the agency is concerned about the added costs necessitated by VIN users having to maintain two separate VIN systems, and the means to decode these systems, for the same model year. Further, additional costs to implement the standard will result from the inability of these manufacturers and others similarly situated to coordinate the changes required by the standard with other changes normally made to their vehicles on the model year changeover date.

The agency has also concluded that any adverse effect on safety of a modified effective date for manufacturers whose model year changeover date falls between September 1, 1980, and January 1, 1981, will be negligible, and outweighed by the safety benefits. The number of vehicles which will be affected is small, and the VIN currently used by the manufacturers will be continued in place for the several months involved in the amendment. For these reasons, the agency has concluded that the effective date for Standard No. 115 for manufacturers whose model year changeover date falls between September 1, 1980 and January 2, 1981, should be that model year changeover date. The effective date for all other manufacturers remains September 1, 1980.

Engine Horsepower Rating

American Honda Motor Co., Inc. (Honda) and Volkswagen have asked the agency to interpret the requirement that engine net horsepower be decipherable from the VIN to allow for a slight variation in the actual horsepower from that reported to the agency.

Table 1 of S4.5.2 of Standard No. 115 sets forth the information for each type of vehicle which must be decipherable from the VIN. Except for trailers, the VIN for all types of vehicles must encode "engine type". "Engine type" is defined in S3 of the standard as "a power source with defined characteristics such as fuel utilized, number of cylinders, displacement, and net brake horsepower." In addition, the VIN for motorcycles must reflect net brake horsepower.

Honda and Volkswagen have pointed out to the agency that a particular engine's horsepower may vary slightly from others of the same manufacturer and model depending upon its method of installation. The agency has also been informed in comments to the docket that engines which are essentially the same, particularly in trucks, may have slightly differing horsepower ratings depending on the requirements of the ultimate purchaser of the vehicle. Further, in the case of Honda, the difference may be as great as 20 percent because of engine modifications to meet necessary requirements of the State of California. To encode in the VIN slight differences in horsepower ratings would be an inefficient use of its information carrying capacity, the manufacturers argue.

The NHTSA concurs in this evaluation. The purpose of the horsepower rating requirement is to obtain information for accident and fuel economy research, and it is not necessary to have precise horsepower ratings for these purposes. Consequently, the agency is amending the standard to provide that the value for engine net brake horsepower encoded in the VIN may differ, with one exception, by 10 percent from the actual net brake horsepower. Motorcycles whose horsepower rating is 2 brake horsepower or less may not be indicated as being above that rating and motorcycles whose horsepower rating is above 2 brake horsepower must so indicate. The purpose of this exception is to preserve the distinction in the VIN between motorcycles and mopeds. It should also be noted that the permissible deviation margin cited above is only authorized for Standard No. 115, and does not apply to other standards.

The agency has considered the economic impact of this final rule and determined that it is not significant within the meaning of Executive Order 12044 and the Department of Transportation's policies and procedures for implementing that order. The agency has determined further that the impact is so minor as not to require preparation of a written evaluation of it. This is because the amendments impose no new costs upon manufacturers and seeks to lessen the difficulties of compliance with the Standard.

The principal authors of this notice are Frederic Schwartz, Jr. of the Office of Chief Counsel and Nelson Erickson of the Office of Vehicle Safety Standards.

In consideration of the foregoing, Standard No. 115, 49 CFR 571.115, is amended as follows:

1. Table I in S4.5.2 is amended to read as follows:

Table I—Type of Vehicle and Information Decipherable

Passenger car: Line, series, body type, engine type,[1] and restraint system type.

Multipurpose passenger vehicle: Line, series, body type, engine type,[1] and gross vehicle weight rating.

Truck: Model or line, series, chassis, cab type, engine type,[1] brake system and gross vehicle weight rating.

Bus: Model or line, series, body type, engine type,[1] and brake system.

Trailer: Type of trailer, series, body type, length, and axle configuration.

Motorcycle: Type of motorcycle, line, engine type,[1] and net brake horsepower.[1]

Incomplete vehicle: Model or line, series, cab type, engine type,[1] and brake system.

---

[1] Engine net brake horsepower encoded in the vehicle identification number shall differ by not more than 10 percent from the actual net brake horsepower; shall, in the case of a motorcycle with an actual net brake horsepower of 2 or less, not be more than 2; and shall, in the case of a motorcycle with an actual brake horsepower greater than 2, be greater than 2.

2. S6.1 is revised to read as follows: S6.1 Manufacturers of motor vehicles subject to this standard shall submit, either directly or through an agent, the unique identifier for each make and type of vehicle it manufactures by February 24, 1980.

Issued on February 19, 1980.

Joan Claybrook,
Administrator

45 F.R. 12255
February 25, 1980

PREAMBLE TO AN AMENDMENT TO
FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 115

Vehicle Identification Number

(Docket No. 1-22; Notice 12)

ACTION: Final rule.

SUMMARY: This notice amends Federal Motor Vehicle Safety Standard No. 115, *Vehicle Identification Number,* by deleting portions of that standard and reissuing those portions as a general agency regulation. This is being taken in response to a petition from the Motor Vehicle Manufacturers Association (MVMA). It is intended to assure that the recall and remedy provisions of the National Traffic and Motor Vehicle Safety Act ("the Act") do not apply to certain errors in vehicle identification numbers (VIN's) which are minor and have no safety consequences. The basic substantive requirements of Standard 115 are unchanged by this action.

DATES: This action is effective 30 days after publication in the *Federal Register.*

SUPPLEMENTARY INFORMATION: The VIN is that unique number assigned each vehicle during production by the manufacturer for purposes of identification and inventory control. The VIN has other users. A variety of other organizations use the VIN for such purposes as vehicle registration, insurance rating, and theft investigation. NHTSA uses the VIN in its safety research and investigation activities.

In 1968, Federal Motor Vehicle Safety Standard (FMVSS) 115 was adopted, specifying that each passenger car must be assigned a unique VIN. In 1979, FMVSS 115 was extended to cover motor vehicles other than passenger cars. Also, a uniform, 17-character format for VIN's was then established, specifying coded information such as the identity of the manufacturer, vehicle make, type of vehicle, various vehicle attributes, model year, plant of manufacture, and production sequence. The VIN also contains a check digit which aids in the detection of errors in the transcription of VIN's by the users of the numbers.

On June 13, 1980, MVMA petitioned this agency to withdraw FMVSS 115 and reissue its provisions in the form of a general agency regulation. The significance of this change stems from section 152 of the Act (15 U.S.C. 1412), which provides that whenever the Secretary of Transportation determines that a vehicle does not comply with a FMVSS, the Secretary must require the vehicle's manufacturer to notify the owners, purchasers, and dealers of the vehicle of that noncompliance and to remedy the noncompliance. However, in the case of a noncompliance with a regulation other than a FMVSS, the notification and remedy requirements of the Act do not apply. For those noncompliances, more flexible methods of enforcement are permitted.

MVMA sought to assure through its requested amendment that errors in the assignment of VIN's would not trigger the recall and remedy provisions of the Act. Requiring that errors in assigned VIN's must be physically corrected would be undesirable in most cases for two reasons. First, correcting the errors would be an expensive and burdensome process, whose possible benefits would be greatly outweighed by the costs. These burdens and costs are discussed in the NPRM. In most cases, simply providing information on the nature of the error to users of the VIN's would solve any problems caused by the incorrect VIN. Second, changing a previously assigned VIN could create antitheft problems. Law enforcement authorities consider the presence of an altered VIN in a vehicle to be an indication that the vehicle has been stolen. If VIN's were frequently altered lawfully, it would be more difficult for the police to detect stolen vehicles.

Further, if the equipment necessary to alter VIN's were widely available (such as at all auto dealers, as might be necessary to conduct a recall and remedy campaign), thieves' access to such equipment would be greatly increased. Law enforcement authorities have consistently recommended to NHTSA that VIN numbers, once assigned, should not be altered for any reason, even if the original number was incorrect.

The only exception to the recall requirement is contained in section 157 of the Act (15 U.S.C. 1417) which authorizes exemptions from these requirements based on a demonstration that the noncompliance is inconsequential as it relates to safety. This authority could be used to relieve a manufacturer of the necessity of conducting a recall and remedy campaign to correct minor VIN errors. Minor labeling errors were among the examples given in the legislative history of the provision for the sorts of errors that are inconsequential. While exemptions might well be given under section 157 for minor VIN errors, the necessity of conducting the exemption proceedings for such errors imposes an excessive administrative burden. The amendments made by this notice eliminate that burden.

MVMA suggested that one possible consequence of a change in the status of the VIN provisions might be a loss or narrowing of Federal preemption. Under section 103(d) of the Act (15 U.S.C. 1392(d)), whenever a FMVSS is in effect, no State may establish or maintain a requirement applicable to the same aspect of performance unless the State requirement is identical to the FMVSS. The removal of various VIN requirements from FMVSS 115 removes them also from the operation of section 103(d). Recognizing this and the clear undesirability of having differing VIN requirements established by the States, MVMA modified its petition on April 18, 1982. In its modified petition, MVMA requested that only certain VIN provisions be shifted from the standard to the regulation. Requirements establishing the fundamental characteristics of the VIN, such as its length, location, and readability, would remain in the standard. Under the amended petition, the content of the VIN would be specified in the VIN regulation. The combined standard/regulation scheme is intended to remove the threats of potentially costly recall campaigns to correct minor VIN errors or of inconsequentiality proceedings, while ensuring that the preemptive effect of the FMVSS is still maintained for the more significant requirements.

After reviewing the MVMA petition, the agency tentatively concluded that MVMA's suggested regulatory changes have merit, and proposed to adopt those changes. See 47 FR 42004, September 23, 1982. (The agency believes that general principles of Federal preemption are sufficient to assure that the VIN regulation will preempt any inconsistent State requirements.) Based on further review of that petition and the comments received on the September notice of proposed rulemaking (NPRM), the agency is herein adopting these changes in final form.

Comments on the NPRM

Virtually all the comments received on the September NPRM supported the proposed changes to FMVSS 115. However, several commenters suggested slight changes or clarifications to the proposed regulatory language. The most controversial aspect of the proposal was the provision which would exempt from certain VIN requirements vehicles imported into the United States under bond, which do not meet U.S. standards, but which will subsequently be modified to meet those standards. As a practical matter, this provision applies to individuals or organizations which import small numbers of vehicles. Several commenters expressed the fear that this provision could result in the importation of large numbers of vehicles (such as by a foreign manufacturer) with nonconforming VIN's. These commenters suggested that the exemption be limited to a maximum of 5 vehicles per year per individual. While the agency agrees that the exemption should not be applied to an actual manufacturer, it cannot justify selecting any particular arbitrary limit, such as five vehicles, to exclude larger commercial organizations. However, in response to these comments, the agency is amending this provision to exclude actual manufacturers of vehicles and their subsidiaries.

Several commenters also suggested that information on VIN errors should be provided to the National Crime Information Center (NCIC, part of the Federal Bureau of Investigation) and the National Automobile Theft Bureau (NATB, a private organization affiliated with the insurance industry). These organizations could enter the information in their computer systems, thereby making it available to State motor vehicle administrations, law enforcement organizations, and other

VIN users. The agency agrees that taking this step would help assure that VIN users would have complete and accurate information on the VIN's which are actually assigned by the vehicle manufacturers. Accordingly, NHTSA will establish an internal procedure for routinely transmitting VIN error information to NCIC and NATB.

Most commenters also suggested that the agency define the term "trailer kit" and specify in the regulation the agency's previously established policy, i.e., that trailer kits are subject to the same VIN requirements as trailers. The agency believes that making these changes is appropriate, and is adopting a definition of trailer kits based on language in 49 CFR 567.4(g). "Trailer kits" are defined as a trailer which is delivered in complete but unassembled form, and which can be assembled without special machinery or tools.

MVMA suggested that the "trailer kit" definition should be added to the definitions in the beginning of Part 571. Taking that action would not serve any present purpose, since the term is apparently not used in any other FMVSS. MVMA also suggested incorporating all the definitions in Part 571 into FMVSS 115. The agency sees no need for this change, and making the change could have unintended effects, such as where a term's definition in one standard is inappropriate for use in FMVSS 115. Therefore, these recommendations were not adopted.

The International Association of Chiefs of Police and the NATB also suggested that the agency define the term "glider kit" and specify that VIN requirements are applicable to glider kits. Typically, a glider kit is a new truck cab, frame rails, and front suspension without drive train (engine, transmission, and rear axle). The treatment of combinations of new and used components in a single vehicle is currently specified in 49 CFR 571.7. Under that provision, the addition of a new cab, frame rail, and front suspension is deemed to create a new vehicle subject to all applicable safety standards in effect as of the date of remanufacture, unless the engine, transmission, and drive axle (as a minimum) of the assembled vehicle are not new and at least two of those listed components were taken from the same vehicle. Thus, in many situations, the use of a new glider kit would not require that a new VIN be affixed to the assembled vehicle. Further, it would be difficult for the glider kit manufacturer to assign a VIN, as suggested by the two commenters, since a truck VIN must contain coded information regarding the engine type, and the glider kit manufacturer would not generally know what type of engine would be used with a particular kit. Therefore, the agency is not adopting the provisions suggested by these two commenters, and will instead rely on the existing regulations for dealing with glider kits.

The Iowa Department of Transportation objected to the practice of some motorcycle manufacturers of stamping a portion of the VIN on motorcycle frames. The Iowa agency points out that this practice could cause confusion as to which number is the actual VIN. NHTSA has taken the position that, so long as the vehicle manufacturer complies with all requirements in FMVSS 115 with regard to the specified 17 character number, these manufacturers may affix other numbers to the motorcycles for their own purposes. Currently, NHTSA cannot justify altering this policy. However, should we become aware of substantial numbers of incidents where the use of this supplementary number has undermined the Federal VIN system, we may consider prohibiting these supplementary numbers, requiring that supplementary numbers must be the same 17 character number as the VIN, or some clarifying labeling where other than the VIN is used. The NCIC objected to the exemption of farm equipment from VIN requirements. The VIN requirements, like all of the FMVSS, apply only to "motor vehicles", i.e., vehicles which are manufactured primarily for use on the public roads, consistent with the scope of the agency's regulatory authority under the Act. See section 102(3) of the Act. The agency lacks the authority to regulate vehicles which are principally used off the public roads, such as the vehicles cited by these two commenters. Should the States decide to apply VIN requirements to such vehicles as a matter of State law, NHTSA would have no objection.

Ford Motor Company and the MVMA pointed out that the requirement that VIN's affixed to vehicles must have a letter height of at least 4 millimeters should only apply to passenger cars and trucks with a gross vehicle weight rating of 10,000 pounds or less as the requirement has ever since it was established. In the NPRM, this requirement was inadvertently applied to all motor vehicles. The error is corrected in the final rule.

MVMA also requested that the new VIN regulation maintain the requirement that, for manufacturers of under 500 vehicles per year, the third

character of the VIN must be the number 9. The agency deleted this provision, since prior to its amendment today, FMVSS 115 gave the erroneous impression that vehicle manufacturers selected the world manufacturer identifier (WMI) portion of their VIN's. In fact, the Society of Automotive Engineers assigns those characters for U.S. manufacturers. The deletion of the phrase specifying the third character of the VIN for small manufacturers in no way changes the intended numbering system—SAE will continue to assign WMI's as it has in the past.

The American Association of Motor Vehicle Administrators has requested that NHTSA reemphasize that vehicle manufacturers must submit and update deciphering information on their VIN systems. This final rule continues to provide that at least 60 days prior to affixing any VIN, or, when information is unavailable at that time, within one week after it becomes available, each manufacturer must submit information necessary to decipher its VIN system. This requirement, which has been in effect since January 1981, applies to both the original submission of deciphering information and to updates of that information as new products are offered by the manufacturer. It is the manufacturer's responsibility to assure that deciphering information provided to NHTSA is current.

Ford Motor Company argued that sections 108 and 152 of the Act, which the agency listed as part of the legal authority for the new VIN regulation, are not appropriate authority for this action. Section 108 was cited as authority merely to point out that, in conjunction with the reference to section 112 as authority for the action, failure to comply with the VIN regulation would be enforceable as a violation of section 108(a)(1)(E) of the Act. The reference to section 152 is included to point out the regulation is issued to facilitate carrying out the recall provisions of section 152 of the Act. The NPRM should also have included (and this final rule includes) a reference to the safety research authority of section 106 of the Act, a major use of the VIN information.

This action is being made effective 30 days after publication in the *Federal Register*. This relatively expedited effective date is in the public interest since it will quickly remove the potential problem of unwarranted VIN-related recalls.

The principal impact of this action is to remove this threat of an unduly burdensome recall requirement to correct VIN errors. The new Part 565 would not have any requirements not in FMVSS 115 prior to today. The agency anticipates that the manufacturers will continue to assign VIN's in the same manner regardless of whether VIN requirements take the form of a safety standard or a regulation. Further, the agency anticipates that the corrective action required in case of erroneous VIN's would not essentially differ as a result of this proposed change, since only in extreme cases can the agency envision having to order a vehicle recall.

This action should have a small positive impact on foreign trade, since it removes the threat to foreign manufacturers of a potentially burdensome recall campaign to correct minor VIN errors. Also, the exemption of vehicles imported under bond will have a small positive impact on foreign trade.

The agency has concluded that the environmental consequences of this action will be of such limited scope that they clearly will not have a significant effect on the quality of the human environment; that this proposal does not qualify as a "major rule" within the meaning of Executive Order 12291; and that due to its minimal cost impacts, this rule is not "significant" within the meaning of the Department's regulatory procedures. Therefore, preparation of neither a regulatory analysis nor full regulatory evaluation is necessary for this action. The agency notes this rulemaking action should have a small, positive impact on small firms—particularly small manufacturers and small importers. This regulation provides relief to small manufacturers from the generally applicable 60-day VIN prenotification requirements in the case of orders for unique vehicle configurations. The agency is also exempting small importers (principally individuals importing one vehicle for their own use) from certain VIN format and content requirements. Given the relatively minor economic consequences of these changes, I certify that this action will have no significant economic impact on a substantial number of small entities, including small organizations or governmental units. These changes should have no impact on vehicle prices. For this reason and because VIN's will continue to be assigned to new vehicles as before, the agency does not anticipate any impacts on small organizations or governmental

units. Accordingly, no Regulatory Flexibility Analysis has been prepared.

For the reasons stated above, the agency is amending Chapter V of Title 49 of the Code of Federal Regulations by adding a new Part 565.

Issued May 13, 1983.

Raymond A. Peck, Jr.,
Administrator

48 F.R. 22567
May 19, 1983

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 115

Vehicle Identification Number

[Docket No. 1-22; Notice 13]

ACTION: Correction.

SUMMARY: On May 19, 1983, the agency published an amendment to Standard No. 115, *Vehicle Identification Number.* The amendment exempted from certain of the vehicle identification number (VIN) requirements vehicles imported into the United States under bond which do not meet U.S. standards at the time of importation, but which subsequently will be modified to meet those standards. This notice corrects a typographical eror in that amendment, in order to clarify the specific provisions from which such importers are exempted.

EFFECTIVE DATE: January 30, 1985.

SUPPLEMENTARY INFORMATION: On May 19, 1983 (48 FR 22567), NHTSA published a rule amending Federal Motor Vehicle Safety Standard (FMVSS) No. 115, *Vehicle Identification Number.* That amendment, made in response to a petition filed by the Motor Vehicle Manufacturers Association, took certain portions of the existing FMVSS and placed those provisions in a separate agency regulation. This change was intended to remove the possibility that certain minor VIN errors regarding the format and content of the number would trigger the recall and remedy provisions of the National Traffic and Motor Vehicle Safety Act (which apply to violations of an FMVSS but not to violations of a general regulation). While the May amendment left the basic substantive VIN requirements unchanged, one substantive amendment was implemented in that notice. That amendment exempted from most VIN requirements vehicles which do not meet U.S. standards imported into the United States under bond (except by the actual manufacturer of the vehicle or a subsidiary thereof), but which will subsequently be modified to meet those standards. (These vehicles will be referred to herein as "bonded imports.") Bonded imports are still required to have a vehicle identification number assigned by the manufacturer and affixed to the vehicle in a specified location. (Volkswagen has filed a petition for reconsideration of the amendment, which is being reviewed by the agency.)

Due to a typographical error involving the omission of a clause and section numbering changes that occurred in the period between the agency's proposal and issuance of the final rule, there has been some confusion with regard to the precise scope of the bonded-import exemption. This notice amends FMVSS 115 to make clear that bonded imports are exempt only from the standard's requirement that each VIN have 17 characters in a specified format and check digit. Bonded imports must still have a unique VIN assigned by the assembling manufacturer which is permanently affixed to the vehicle, and is clearly legible. This notice also corrects the standard to specify that the exemption does not apply to an assembling manufacturer or its subsidiary. The preamble to the final rule explained that change, but it was not incorporated into the text of the standard.

The corrections to FMVSS 115 made in this notice will be effective immediately on publication in the *Federal Register.* The agency finds good cause for determining that notice and comment on this amendment are not necessary. Likewise, the agency finds good cause for an immediate effective date within the meaning of 5 U.S.C. 553(d) and finds that such an effective date is in the public

interest within the meaning of 15 U.S.C. 1392(e). The basis for the findings of good cause is that the amendment corrects an obvious error in the rule as originally promulgated and should not adversely affect the ability of importers to comply with the standard.

For the reasons stated above, the agency is amending Title 49 of the Code of Federal Regulations, by revising Part 571.115, *Vehicle Identification number*, as follows:

Standard 115: Vehicle identification number—basic requirements.

1. Paragraph S1 is amended by removing the second sentence of that paragraph, which reads as follows: "Vehicles * * * standard."

2. Paragraph S2 is amended by adding a new second sentence to read as follows:

Vehicles imported into the United States under 19 CFR 12.80(b)(1)(iii), other than by a corporation which was responsible for the assembly of that vehicle or a subsidiary of such a corporation, are exempt from the requirements of S4.2, S4.3, and S4.7 of this standard.

Issued on January 22, 1985.

Diane K. Steed
Administrator

50 FR 4221
January 30, 1985

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 115

Vehicle Identification Number — Basic Requirements (Docket No. None Issued)

ACTION: Final Rule

SUMMARY: This notice amends the applicability section of Motor Vehicle Safety Standard No. 115 to substitute a reference to Part 591 of this title for a reference to 19 CFR 12.80. This amendment conforms Standard No. 115 with the requirements of amendments made to the National Traffic and Motor Vehicle Safety Act by P.L. 100-562.

EFFECTIVE DATE: January 31, 1990

SUPPLEMENTARY INFORMATION: The National Traffic and Motor Vehicle Safety Act was amended by the Imported Vehicle Safety Compliance Act of 1988 (P.L. 100-562). Those amendments were enacted on October 31, 1988, and will become effective January 31, 1990. The amendments revoke the joint authority previously provided by 15 U.S.C. 1397(b)(3) under which motor vehicles subject to the Federal motor vehicle safety standards are admitted into the United States pursuant to joint regulations issued by the Departments of Treasury and Transportation. Instead, the Vehicle Safety Act, as amended, vests the primary importation regulatory authority in the Department of Transportation.

The existing joint vehicle importation regulation is 19 CFR 12.80. The forthcoming importation regulation of this agency is 49 CFR Part 591. Paragraph S2, Application of 49 CFR Part 571.115 Motor Vehicle Safety Standard No. 115, *Vehicle Identification Number—Content Requirements* exempts from certain of its requirements "Vehicles imported into the United States under 19 CFR 12.80(b)(1)(iii), other than by a corporation which was responsible for assembly of that vehicle or a subsidiary of such a corporation. . . ." This relates to the importation of vehicles not originally manufactured to conform to the Federal motor vehicle safety standards. The section of the new importation regulation that corresponds to 12.80(b)(1)(iii) is 49 CFR 591.5(f). This notice amends Standard No. 115 to delete reference to the old authority and to add reference to the new one.

In consideration of the foregoing, 49 CFR 571.115 Motor Vehicle Safety Standard No. 115 is amended to read as follows:

In paragraph S2, the citation "19 CFR 12.80(b)(1)(iii)" is changed to read "paragraph 591.5(f) of this chapter".

Issued on: October 5, 1989

Jeffrey R. Miller
Acting Administrator

54 F.R. 41844
October 12, 1989

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 115

Vehicle Identification Number; Basic Requirements
(Docket No. 88-08; Notice 2)
RIN: 2127-AC65

ACTION: Final Rule.

SUMMARY: In this final rule, NHTSA changes vehicle identification number and certification requirements for motor vehicles that were not originally manufactured for sale in this country, do not comply with the Federal motor vehicle safety standards, and are imported into the United States by businesses unaffiliated with the original manufacturer. This final rule would make it clear that the importer of such vehicles would be required to use one of the unique coding identifiers that the original manufacturer assigned to the vehicle, in lieu of using the 17-character U.S. vehicle identification number (VIN) required to be placed on vehicles originally manufactured for sale in this country. The direct importer must place the original manufacturer's identifier on a plate that would appear inside the passenger compartment of the motor vehicle, so that the number may be observed through the glazing, and adjacent to the left windshield pillar.

EFFECTIVE DATE: December 4, 1989.

SUPPLEMENTARY INFORMATION: Under section 108(b)(3) of the National Traffic and Motor vehicle not conform with applicable safety standards may nonethe less enter the United States under "such terms and conditions" as the Secretaries of Transportation and Treasury prescribe. Title 19 CFR 12.80 is a joint Transportation/Treasury regulation setting forth those terms and conidtions. Subparagraph (b)(1)(iii) of that regulation requires that a person seeking to bring a nonconforming import (direct import vehicle) into the United States file a declaration that the vehicle will be modified so as to conform with applicable Federal Motor Vehicle Safety Standards. Among those Standards is 115, Vehicle Identification Number—Basic requirements.

In order to comply with Standard 115 requirements, many direct importers have been applying a "homemade" VIN plate to their imported vehicles. The VINs added by direct importers are so different in appearance from VINs on similar vehicles manufactured for sale in the United States that law enforcement officials have mistaken them for altered VINs. Other concerns presented by these "homemade" VIN plates are identification problems that have been created for insurance investigators and encoding errors that compromise the integrity of the VIN system.

This rulemaking arose when the agency granted a petition submitted by the National Automobile Theft Bureau (NATB or petitioner) to amend Standard 115 to address problems arising when direct importers create a VIN and a VIN plate using an identification number and plate production process other than the ones which the original vehicle manufacturer uses. Among problems noted by the NATB were an increased prospect of encoding errors in a homemade VIN, law enforcement officials mistaking homemade VIN plates for altered plates, and the resulting risk that individuals lawfully possessing direct import vehicles may be subject.d to criminal charges.

The petitioner recommended that NHTSA take action to prevent the direct importer from creating its own VIN. In place of its own VIN, the importer would be required to follow one of two alternative means of identifying a vehicle. First, if the original manufacturer had placed any kind of identification number plate in the passenger compartment where Standard 115 would otherwise require a 17-character VIN plate, the importer would retain the original manufacturer's plate as the vehicle's VIN plate. Among the original manufacturer identification numbers that one might use in place of the United States VIN are the European vehicle identification number (EuroVIN), the World Market vehicle identification number (WorldVIN), the chassis number, or the vehicle serial number.

Second, if the original manufacturer had not affixed a plate of the type and in the location described at S4.6 of Standard 115 (49 CFR 571.115), then the importer would be required to affix a plate in that location stating that the vehicle is "partially exempt" from Standard 115. This plate would refer a person to the driver's door post, where the importer would be required to affix a label with information that cited the Joint Transportation/Treasury regulation under which a person directly imports a noncomplying vehicle, identified the location on the vehicle of the original

manufacturer's number to be used in lieu of the 17 character VIN, gave the name and address of those bringing the vehicle into compliance with Standard 115, stated the date of importation and of certification, and gave the name and address of the person who made the certification.

Notice of Proposed Rulemaking. In the notice of proposed rulemaking (NPRM) published May 13, 1988 (53 Federal Register 17088), the agency acknowledged the problems with VINs on direct import vehicles and proposed to amend Standard 115 so that a direct importer need not create a VIN or VIN plate in order to comply with United States vehicle identification requirements under Standard 115. NHTSA could not agree that *any* extant original manufacturer identifier in the S4.6 location would obviate the need for some notice that the vehicle is partially exempt from Standard 115.

The agency believed it would be a relatively simple matter to affix a plate informing an interested person that a vehicle is partially exempt, and refer the person to another label on the door post that would specify the unique identifying number for the vehicle. The agency therefore proposed to require such a plate on any vehicle that did not have the 17-character United States VIN. Because of this proposed approach, the agency believed it was unnecessary to consider NATB's suggestion that a EuroVIN, WorldVIN, chassis, or serial number be exempted from the readability and location requirements in S4.6.

A second way in which NHTSA's proposal varied from the NATB petition was that the agency did not propose to require a lengthy label with a citation to 19 CFR 12.80, and information about the person performing work to bring the vehicle into compliance with Standard 115. The agency proposed instead to require a simplified label that stated where an interested person could find the unique manufacturer identifying number that would be used in lieu of the United States VIN. Further, for consistency, the agency proposed to include labeling requirements under Part 567. It was proposed that paragraph (k) of section 567.4 be deleted and that sections 567.5, 567.6 and 567.7 be redesignated as sections 567.6, 567.7, and 567.8, respectively. Under a new section 567.5 (for the most part former section 567.4(k)), the language regarding labeling requirements for high theft lines imported into the United States would be retained, with minor changes, as section 567.5(a). The proposed section 567.5(b) outlined a requirement for a label for direct import vehicles that would be affixed in one of three locations. This label would state: "Original Manufacturer's Identification Number Substituting for U.S. VIN is located," and direct the reader to the location on the vehicle where the original manufacturer's identification number, placed by the original manufacturer, could be found.

NHTSA also sought comment, particularly from law enforcement officials, on two issues:

(1) Whether the proposed changes could, in some circumstances, increase the fraudulent use of VINs or impede law enforcement actions. As an example, the agency noted that in certain circumstances, vehicles with the proposed FMVSS 115 exemption label would no longer have a VIN visible through the glazing. NHTSA requested comment on whether this situation would create a law enforcement problem by precluding the inspection of VINs on parked and locked vehicles.

(2) Whether the proposal could lead to improper use of VIN exemption plates (e.g., replacing a legitimate VIN), since, under certain circumstances, it would allow an exemption plate where the VIN would be if it had been a passenger car built for the U.S. market.

The Comments and the Agency Response. The agency received eight responses to the NPRM. Four commenters addressed the first question presented in the NPRM, concerning using an exemption plate in lieu of a VIN or other identification number in the S4.6 location. The Automobile Importers of America, Inc. (AIA), Porsche, the International Association of Auto Theft Investigators (IAATI), and the National Automotive Theft Bureau (NATB) recommended that NHTSA require each vehicle to have an identification number visible from the outside of the vehicle. In response to these comments, the agency has adopted a requirement for a plate or label containing the original manufacturer's identification number in the S4.6 location, with a reference to Standard 115.

The agency believes that this solution addresses the agency's initial concern about the possibility of transcription errors while at the same time maintaining an identification number in the place where law enforcement officials are accustomed to see it. In cases where the original manufacturer's identification number is in the S4.6 location and does not conform to Part 565, the presence of the identifying notice alongside it will serve to inform law enforcement personnel that the vehicle is a direct import vehicle that has been modified to conform to U.S. safety standards. Any transcription errors would be immediately evident, since the number on the identifying notice should be identical to the original number alongside it. Where the original manufacturer's identification is located elsewhere, the identifying notice will provide the number and also alert an investigating officer that the number is a substitute for the number ordinarily required by FMVSS 115.

Further investigation by the agency has not found any evidence indicating that direct importers have been using a 17-character VIN that they have created themselves; conformity bonds are not released if they do. However, they do create another plate using the original manufacturer's identification number that

they install behind the windshield, in the S4.6 location. In the interest of clarity and to the extent direct imports have been a problem to theft investigators and other interested parties, the requirement is being amended. Also, in the NPRM, the notice in the S4.6 location was proposed to read: "FMVSS 115 EXEMPT VEHICLE. SEE DRIVER'S SIDE DOOR POST." After reevaluation, the agency had determined that the wording "FMVSS 115 EXEMPT VEHICLE" may imply that direct importers are being exempted from all aspects of FMVSS 115. It is more accurate to state that the original manufacturer's identification number is used as a substitute for a VIN, required by FMVSS 115.

The following language will therefore be required in the final rule:

SUBSTITUTE FOR U.S. VIN:
SEE FMVSS 115.

With this alternative, law enforcement officials would also know that the passenger car in question does not have a U.S. VIN.

The second question raised in the NPRM, whether the proposal would lead to improper use of VIN exemption plates, was addressed by one commenter. The NATB expressed a belief that it would be very important to prevent any VIN exemption plate from being overlaid on the original manufacturer's identifier in the S4.6 position. NATB commented: "Unless there is a specific anti-overlayment provision included in FMVSS 115 it is a virtual certainty that organized theft perpetrators will take advantage of the situation and affix the VIN exemption notice over the location of the legitimate VIN plate." NATB suggested that the notice be required to be affixed in a location other than the location used by the vehicle's original manufacturer for affixing VIN plates in the same or similar vehicle lines. The agency agrees, and has accordingly adopted the following language in the final rule as Paragraph S4.9(c) to ensure the original manufacturer's identification number will not be covered, obscured, or overlaid:

(c) The plate or label by (b) shall be permanently affixed in a location that conforms to S4.6, in such manner as not to cover, obscure, or overlay any part of any identification number affixed by the original manufacturer, and shall conform to S4.7 and S4.8.

Two commenters expressed concern about the lack of a check digit in the original manufacturer's identification number. Besides noting that lack of a check digit could be a problem, AIA cited errors in transcription which are not caught despite a check digit system, resulting in vehicles with incorrect VINs. AIA suggested that the solution to this problem is to ensure that all entries are transcribed correctly, and that all other regulations are complied with.

In noting that original manufacturer's identification numbers from various makes would not have the benefit of a check digit, Porsche asserted that "[t]his lack of a check-digit negates another of the prime features of the current VIN — the ability to rapidly check for transcription mistakes." Although the agency believes that a check-digit is useful in preventing transcription errors, it regards the risk of error from "homemade" VINs as significantly greater. It has therefore concluded that the original manufacturer's identification number should be retained by the direct importer.

Besides the comments summarized above, AIA pointed out to the agency that there is no concept of "model year" in Europe. AIA believed that for this reason, "gray market importers cannot possibly discern a model year to put on the label." NHTSA has accepted this comment from AIA. Accordingly, § 567.4(k)(4)(i) has been amended to read: "Model year (if applicable) or year of manufacture, and line of the vehicle as reported by the manufacturer that produced or assembled the vehicle." Also included is a statement that " 'Model year' is used as defined in § 565.3(h) of this chapter."

IAATI also recommended a separate label that would provide information on the person who performed the work bringing the vehicle into compliance with Standard 115. The rationale for this recommendation is that it would give an investigator a starting point to trace the vehicle through the person performing the compliance work and back to the original manufacturer. The agency believes it is already requiring enough information, on as many as three labels at the door post or alternate positions, without requiring this information also. In the few instances where law enforcement officers or other investigators need this information, they would obtain information about who did the compliance work by contacting the direct importer or NHTSA.

In addition to the comments recommending specific changes in the final rule, the agency also received several comments from Allstate Insurance Company and the Highway Loss Data Institute in general support of the rulemaking. The National Automobile Dealers Association supported the NHTSA proposal and urged NHTSA "to consider the need to readily and clearly identify these vehicles as being direct imports." They believed that the proposed amendments to the VIN standards would "serve to establish a nationally recognized gray market identifier on each vehicle."

Volkswagen of America, Inc. encouraged NHTSA to "promote enforcement of the safety standards for all vehicles regardless of who the manufacturer or importer may be." They noted that although the proposal would eliminate encoding errors in "homemade" VINs, the same result could be had by enforcement of the existing regulation requiring display of the correct VIN on all vehicles.

The agency is aware that this rule will be more effectual for original manufacturer identifiers utilizing Roman letters or Arabic numerals than for manufacturer identifiers which may be used in countries with non-Roman letters. If the use of non-Roman letters becomes a source of confusion, the agency may undertake further remedial action.

Other Changes in the Final Rule.

Redesignation of Sections in Part 567.

The NPRM proposed that Section 557.4(k) be dropped, that Sections 567.5, 567.6, and 567.7 be redesignated as Sections 567.6, 567.7, and 567.8, respectively, and that a new Section 567.5 *Special requirements for motor vehicles admitted under 19 CFR 12.80* be added. Upon reevaluation, the agency has decided that rather than redesignating existing provisions in Part 567, and adding new sections with whole paragraphs that are identical to old paragraphs, the same end would be accomplished more simply by adding a new 567.4(l) (that would require identification on the vehicle of the original manufacturer's number) after §567.4(k). This new §567.4(l) is the same in substance as §567.5(b) in the notice of proposed rulemaking.

High Theft Lines.

49 CFR Part 541 requires that 14 major parts of designated passenger motor vehicle lines be marked with Vehicle Identification Numbers, even if the vehicle was not originally manufactured for the U.S. market. FMVSS 115 does not exempt importers of vehicles not manufactured for sale in the U.S. from complying with the parts-marking requirements of 49 CFR Part 541 for the car lines listed in Appendix A to Part 541. As a result of the agency's decision to require retention of the original manufacturer's VIN, the fourteen designated major parts (Section 541.5(a)) must be marked with the original VIN assigned to the car by its original manufacturer. The subject vehicle *must* be in compliance with the theft prevention standard before it is imported into the United States. The markings must be affixed or inscribed in accordance with the target area requirements designated by the manufacturer that is the original producer who installs or assembles the covered major parts on a line.

Section 567.5(k) applies to direct import high theft lines. §567.5(l) refers to the direct import vehicles without 17-character U.S. VINs. Therefore, if there should be high theft lines that are brought to the U.S. by direct importers, they would have to have three labels in the positions in the passenger car designated in §567.4(c), namely, the certification label required by §567.4(a), the compliance with Federal motor vehcile theft prevention standard label required by §567.4(k), and the label designating where the original manufacturer's identification number may be found, as required by §567.4(l).

In consideration of the foregoing, Title 49 CFR 567, *Certification*, and 49 CFR 571.115, *Vehicle Identification Number—Basic Requirements*, are amended as follows:

1. The authority citation for Part 567 is revised to read as follows:

Authority: 15 U.S.C. 1392, 1397, 1401, 1403, and 1407; 15 U.S.C. 1912 and 1915; 15 U.S.C. 2021, 2022, and 2026; delegation of authority at 49 CFR 1.50.

567.4 [Amended]

2. Subparagraph (k)(4)(i) of 567.4 is revised to read as follows:

* * * * *

(k) * * * * *

(4) * * * * *

(i) Model year (if applicable) or year of manufacture and line of the vehicle, as reported by the manufacturer that produced or assembled the vehicle. "Model year" is used as defined in 565.3(h) of this chapter. "Line" is used as defined in 541.4 of this chapter.

3. A new paragraph (l) is added to 567.4 as follows:

(l)(1) In the case of a passenger car imported into the United States under 19 CFR 12.80(b)(1)(iii) or 49 CFR Part 591 which does not have an identification number that complies with paragraph S4.2, S4.3, and S4.7 of 49 CFR 571.115 at the time of importation, the importer shall permanently affix a label to the vehicle in such a manner that, unless the label is riveted, it cannot be removed without being destroyed or defaced. The label shall be in addition to the label required by subsection (a) of this section, and shall be affixed to the vehicle in a location specified in subsection (c) of this section.

(2) The label shall contain the following statement, in the English language, lettered in block capitals and numerals not less than three thirty-seconds of an inch high, with the location on the vehicle of the original manufacturer's identification number provided in the blank: ORIGINAL MANUFACTURER'S IDENTIFICATION NUMBER SUBSTITUTING FOR U.S. VIN IS LOCATED _____.

PART 571 [AMENDED]

4. The authority citation for Part 571 would continue to read as follows:

Authority: 15 U.S.C. 1392, 1401, 1403, 1407; delegation of authority at 49 CFR 1.50.

571.115 [AMENDED]

5. S.2 is revised by adding the words "or 49 CFR 591" after the words "19 CFR 12.80(b)(1)(iii)."

6. A new paragraph S4.9 is added to 571.115 to read as follows:

S4.9(a) A passenger car imported into the United States under 19 CFR 12.80(b)(1)(iii) or 49 CFR Part 591 shall retain any identification number affixed by the original manufacturer.

(b) A vehicle described in (a) shall have a plate or label that contains the following statement in char-

(c) The plate or label required by (b) shall be permanently affixed in a location that conforms to S4.6, in such manner as not to cover, obscure, or overlay any part of any identification number affixed by the original manufacturer, and shall conform to S4.7 and S4.8.

Issued on: October 26, 1989

Barry Felrice
Associate Administrator for
Rulemaking

54 F.R. 46253
November 2, 1989.

MOTOR VEHICLE SAFETY STANDARD NO. 115

Vehicle Identification Number—Basic Requirements

S1. Purpose and Scope.

This standard specifies general physical requirements for a vehicle identification number (VIN) and its installation to simplify vehicle information retrieval and to reduce the incidence of accidents by increasing the accuracy and efficiency of vehicle recall campaigns.

S2. Application.

This standard applies to passenger cars, multipurpose passenger vehicles, trucks, buses, trailers, (including trailer kits), incomplete vehicles and motorcycles. Vehicles imported into the United States under 19 CFR 12.80(b)(1)(iii), [or 49 CFR 591] other than by a corporation which was responsible for the assembly of that vehicle or a subsidiary of such a corporation, are exempt from the requirements of S4.2, S4.3, and S4.7 of this standard. **(54 F.R. 46253—November 2, 1989. Effective: December 4, 1989)]**

S3. Definitions.

"Check digit" means a single number or the letter X used to verify the accuracy of the transcription of the vehicle identification number.

"Incomplete vehicle" means an assemblage consisting, as a minimum, of frame and chassis structure, power train, steering system, suspension system, and braking system, to the extent that those systems are to be part of the completed vehicle, that requires further manufacturing operations, other than the addition of readily attachable components, such as mirrors or tire and rim assemblies, or minor finishing operations such as painting, to become a completed vehicle.

"Manufacturer" means the entity responsibility for affixing the vehicle's certification label.

"Trailer kit" means a trailer which is fabricated and delivered in completed and delivered in complete but unassembled form and which is designed to be assembled without special machinery or tools.

"Vehicle identification number" means a series of arabic numbers and roman letters which is assigned to a motor vehicle for identification purposes.

S4. Requirements.

S4.1 Each vehicle manufactured in one stage shall have a VIN that is assigned by the manufacturer. Each vehicle manufactured in more than one stage shall have a VIN assigned by the incomplete vehicle manufacturer. Vehicle alterers, as specified in 49 CFR 567.7, shall utilize the VIN assigned by the original manufacturer of the vehicle.

S4.2 Each VIN shall consist of seventeen (17) characters.

S4.3 A check digit shall be part of each VIN. The check digit shall appear in position nine (9) of the VIN on the vehicle and on any transfer documents containing the VIN and prepared by the manufacturer to be given to the first owner for purposes other than resale.

S4.4 The VIN's of any two vehicles manufactured within a 30-year period shall not be identical.

S4.5 The VIN of each vehicle shall appear clearly and indelibly upon either a part of the vehicle other than the glazing that is not designed to be removed except for repair or upon a separate plate or label which is permanently affixed to such a part.

S4.6 The VIN for passenger cars, multipurpose passenger vehicles, and trucks of 10,000 pounds or less GVWR shall be located inside the passenger compartment. It shall be readable, without moving any part of the vehicle, through the vehicle glazing under daylight lighting conditions by an observer having 20/20 vision (Snellen) whose eye-point is located outside the vehicle adjacent to the left windshield pillar. Each character in the VIN subject to this paragraph shall have a minimum height of 4 mm.

S4.7 Each character in each VIN shall be one of the Arabic or Roman letters set forth in Table 1.

Table 1

Numbers:
1 2 3 4 5 6 7 8 9 0
Letters:
A B C D E F G H I J K L M N P R S T U V W X Y Z

All spaces provided for in the VIN must be occupied by a character specified in Table 1.

S4.8 The type face utilized for each VIN shall consist of capital, san serif characters.

[S4.9 (a) A passenger car imported into the United States under 19 CFR 12.80(b)(1)(iii) or 49 CFR Part 591 shall retain any identification number affixed by the original manufacturer.

(b) A vehicle described in (a) shall have a plate or label that contains the following statement in characters with a minimum height of 4 mm, with the identification number assisgned by the original manufacturer provided in the blank: SUBSTITUTE FOR U.S. VIN: _____. SEE FMSS 115.

(c) The plate or label required by (b) shall be permanently affixed in a location that conforms to S4.6, in such manner as not to cover, obscure, or overlay any part of any identification number affixed by the original manufacturer, and shall conform to S4.7 and S4.8. **(54 F.R. 46253—November 2, 1989. Effective:December 4, 1989)]**

43 F.R. 36452
August 17, 1978

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 116

Motor Vehicle Brake Fluids

(Docket No. 70–23; Notice 3)

This notice amends § 571.21 of Title 49, Code of Federal Regulations, Motor Vehicle Safety Standard No. 116, *Motor Vehicle Brake Fluids*, to establish new performance requirements for brake fluid, and to extend its application to all motor vehicles equipped with hydraulic brake systems, and to all brake fluid for use in hydraulic brake systems of motor vehicles. The amendment also establishes requirements for brake fluid containers and labeling of containers.

A notice of proposed amendment to Federal Motor Vehicle Safety Standard No. 116 was published on September 30, 1970 (35 F.R. 15229). Interested persons have been afforded an opportunity to participate in the rulemaking process and their comments have been carefully considered.

The amendment adopts requirements that were proposed for grades DOT 3 and DOT 4 brake fluid, eliminates SAE Type 70R1 brake fluid, specifies more stringent requirements for physical and chemical properties, specifies the use of SAE SBR wheel cylinder cups in testing, and sets forth requirements for brake fluid containers and brake fluid container labeling.

Comments and available data indicated that the proposed DOT 2 type brake fluid is not a commercially available fluid but is manufactured primarily for military use in Arctic regions and that there is no current need for this additional grade of brake fluid. DOT 2 brake fluid has therefore been excluded from the amendment.

Requirements for DOT 3 and DOT 4 grade fluids are adopted as proposed, with a minor modification in the wet boiling point of the DOT 4 grade fluid. The NHTSA has determined that there is a need for two grades of brake fluid until an all-weather fluid is developed with viscosity and boiling point characteristics suitable for use in all braking systems. In order to provide an added margin of protection against vapor locking in severe braking service, some car manufacturers may wish to recommend use of a DOT 4 fluid for certain severe conditions. Such recommendations should point out that use of the DOT 4 fluid for improved resistance to vapor locking may result in poorer system performance in very cold weather.

The wet equilibrium reflux boiling point test procedure has been adopted as it represents a measure of the capability of the fluid in service. Tests have been run and data accumulated which demonstrate that this test is sufficiently repeatable to justify its inclusion. However, when sufficient data become available on methods of measuring resistance to vapor lock, this agency may consider proposing a new test procedure.

The proposed low temperature viscosity requirements for the DOT 3 and DOT 4 grade fluids have been adopted unchanged. Adequate data exist to support the need for the specified kinematic viscosities at low temperatures to assure adequate brake system performance in cold weather. Since high boiling points are sacrificed for low viscosities at low temperatures, the differences in kinematic viscosities between DOT 3 and DOT 4 grade fluids are justifiable.

The flash point test proposal has not been adopted because comments indicated that the test is not pertinent to in-use performance characteristics. The NHTSA, however, may reexamine the potential flammability hazard posed by motor vehicle brake fluids at a later date, particularly in the event that central hydraulic systems are introduced.

Brake fluid containers with a capacity of six ounces or more must be provided with a reseal-

able closure to reduce the likelihood of contamination after the initial opening.

The labeling requirements as adopted do not require, in all instances, that the manufacturer's name be placed upon the container. Many comments indicated that the manufacturer cannot be held resposible for the quality of a fluid once it has been transferred to a packager who may contaminate or alter the fluid, and the NHTSA concurs. However, the manufacturer, when he is not the packager, will be required to certify compiance to the packager. The packager will be required to state the name of the manufacturer and the distributor on the container label, either directly or in code. He wil be required also to affix a number identifying the packaged lot and date of packaging. It is expected that packagers will keep records sufficient to provide the NHTSA with all identifying information when such is requested. The safety warnings have been reworded to avoid misinterpretations.

Several comments indicated that the proposed effective date of October 1, 1971 would place a hardship on packagers who deal solely in the aftermarket, alleging that lithographed cans must be purchased in quantity. Accordingly, an effective date of March 1, 1972, has been adopted to offer sufficient lead time to insure that all motor vehicle brake fluids manufactured on and after that date will be packaged in containers which meet requirements also effective March 1, 1972.

Petroleum-based fluids are no longer exempted from meeting the requirement of this standard. However, the NHTSA realizes that some manufacturers wish to use these fluids in central power systems and is issuing today an advance notice of proposed rulemaking requesting comments for a suitable performance standard for petroleum-based fluids (Docket No. 71–13; 36 F.R. 12032).

Test procedures adopted are, in general, similar to current ASTM Methods, with SAE Standards J1702b and J1703b as reference sources. ASTM Methods consulted in developing the test procedures include: E 298–68 "Assay of Organic Peroxides," D 1120–65 "Boiling Point of Engine Antifreezes," D 1121–67 "Reserve Alkalinity of Engine Antifreezes and Antitrusts," D 2240–68 "Indentation Hardness of Rubber and Plastics by Means of a Durometer," D 344–39 "Relative Dry Hiding Power of Paints," D 97–66 "Pour Point," D 1415–68 "International Hardness of Vulcanized Natural and Synthetic Rubbers," E 1–68 "ASTM Thermometers," E 77–66 "Verification and Calibration of Liquid-In-Glass Thermometers," D 2515–66 "Kinematic Glass Viscometers," E 70–68 "pH of Aqueous Solutions with the Glass Electrode," E 29–67 "Indicating Which Places of Figures are to be Considered Significant in Specified Limiting Values," D 1123–59 "Water in Concentrated Engine Antifreezes by the Iodine Reagent Method," D 445–65 "Viscosity of Transparent and Opaque Liquids (Kinematic and Dynamic Viscosities)," D 91–61 "Precipitation Number of Lubricating Oils," and E 96–66 "Water Vapor Transmission of Materials in Sheet Form." SAE Referee Materials (SAE RM) used in testing may be obtained from the Society of Automotive Engineers, Inc., Two Pennsylvania Plaza, New York, N.Y. 10001.

Effective date: March 1, 1972.

In consideration of the foregoing, 49 CFR 571.21, Federal Motor Vehicle Safety Standard No. 116, *Motor Vehicle Brake Fluids*, is amended.

. . .

Issued on June 16, 1971.

Douglas W. Toms
Acting Administrator

36 F.R. 11987
June 24, 1971

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 116

Motor Vehicle Brake Fluids

(Docket No. 70–23; Notice 4)

Motor Vehicle Safety Standard No. 116, establishing requirements for motor vehicle brake fluids and containers was amended on June 24, 1971 (36 F.R. 11987). Corrections were published on August 11, 1971 (36 F.R. 14742) and August 17, 1971 (36 F.R. 15534). Pursuant to 49 CFR 553.35 (35 F.R. 5119) petitions for reconsideration of the amendment were filed by Automotive Parts and Accessories Association, Inc., Citroen S.A., General Motors Cohporation, R. M. Hollingshead Corporation, Union Carbide Corporation, and Wagner Electric Corporation. Subsequently, requests for rulemaking were received from Gold Eagle Products Co., and Union Carbide.

In response to information contained in several of the petitions, and to data recently available to the Administrator, the standard is being amended. The Administrator has declined to grant reqested relief from other requirements of the standard.

1. *Deletion of grade DOT 4 fluid.* Wagner Electric petitioned for the deletion of grade DOT 4 fluid, and the adoption of a single minimum standard with the viscosity requirements of grade DOT 4 and the boiling point characteristics of grade DOT 3.

As the Administration noted in the June 24 amendment to Standard No. 116, "there is a need for two grades of brake fluid until an all-weather fluid is developed with viscosity and boiling point characteristics suitable for use in all braking systems." Temperatures of fluids in use in Western mountain driving have reached 295°F., and the Administration deems it essential to retain the DOT 4 fluid, with its minimum wet equilibrium reflux boiling point (ERBP) of 311°F. Accordingly, Wagner's petition is denied.

2. *Deletion or modification of wet ERBP requirements.* Wagner, Union Carbide, and Hollingshead petitioned for the deletion of the wet ERBP requirements on the grounds that the test procedure is not sufficiently reproducible, and that vapor lock temperature is a more appropriate factor to use for determination of operational characteristics of a brake fluid.

The wet ERBP test is based primarily upon the SAE test for determination of the as received boiling point of brake fluid, a test that has been used by industry for years. The major problems in determining water content have been resolved. While the wet ERBP test procedure does not measure actual vapor lock temperature, which is often substantially below that of the wet boiling point, it provides a basis for measuring the in-service capacity of the fluid to resist vapor lock. The petitions are denied.

3. *Petroleum-based and silicone-based fluids.* Standard No. 116 as in effect until March 1, 1972, specifically excludes petroleum-based fluids from its applicability. The amendment of June 24, however, applies to "all brake fluid for use in hydraulic brake systems of motor vehicles," and effectively prohibits the manufacture of petroleum-based and silicone-based fluids whose performance characteristics differ from conventional brake fluids. Although we have asked for comments on appropriate performance requirements for non-hygroscopic fluids (Docket No. 71–13, Notice 1, 36 F.R. 12032), to be incorporated into a standard with a proposed effective date of January 1, 1973, there will be, at a minimum, a 10-month period during which manufacture of these fluids is effectivey prohibited. General Motors and Citreon have asked us to reconsider this point, the latter stating that all its vehicles

use a petroleum-based fluid, and that its sales in the U.S. will be effectively curtained during the hiatus between the two standards.

In the absence of a demonstrable safety problem concerning the use of petroleum-based and silicone-based fluids, the petitions are deemed to have merit and Standard No. 116 is being amended to exclude these fluids from its ambit. We urge manufacturers, however, to take precautions to assure that adverse cross-contamination with hygroscopic fluids does not occur in the absence of appropriate regulations intended to eliminate this hazard.

4. *Labeling requirements.* Automotive Parts and Accessories, General Motors, Hollingshead, Union Carbide, and Wagner Electric petitioned for reconsideration of various portions of the labeling requirements. Gold Eagle also apprised us of problems with labeling requirements.

The petitioners have brought to our attention that packagers may use more than one manufacturer as a source for brake fluid packaged under a single brand name, and that under the present regulation requiring manufacturer identification on the can, packagers will either have to stock dupicate cans or purchase from one source. We initially considered manufacturer identification to be necessary in the event of brake fluid defect notification campaigns. However, it has been determined that the serial number identifying the packaged lot and date of packaging will be sufficient for the packager to identify the manufacturer of any defective fluid, and paragraph S5.2.2.2(b) is being amended to delete manufacturer identification. In response to requests for alternate location of the serial number, S5.2.2.2(d) is being amended to allow the number to be placed below the information by S5.2.2.2(c). An alternate location has also been specified for the information required by S5.2.2.2(b) if it is in code form.

Two petitioners voiced the fear that the safety warning of paragraph S5.2.2.2(g)(1), to follow the vehicle manufacturer's recommendations in adding brake fluid, might result in the promotion by automobile dealers of specified brand names, possibly creating an unfair trade practice. The agency views this possibility as unrelated to motor vehicle safety since presumably all brake fluid will conform to Standard No. 116. In any event, a change of wording cannot eliminate this possibility, and the petitions are denied.

Petitions were also received requesting that the safety warnings against refilling containers (S5.2.2.2(g)(4)) not apply to storage containers with a capacity in excess of 5 gallons, since containers (30 and 50 gallon sizes, tank cars, etc.) differ from retail sale size cans and are reused for shipping purposes after cleaning. These petitions are granted and S5.2.2.2(g)(4) is being amended accordingly.

5. *Applicability to motor vehicles.* Union Carbide asked whether brake fluid in a vehicle must meet the requirements of Standard No. 116 when the vehicle is sold, pointing out that in extreme cases as long as a year may pass between its manufacture and sale. The NHTSA recognizes that original dry boiling points and viscosity of brake fluid may degrade due to the permeability of the brake system when a vehicle is exposed to the atmosphere over a period of time prior to its first sale for purposes other than resale, and that it is impracticable to require that brake fluid meet Standard No. 116 at time of sale when the "container" is a motor vehicle. Therefore, the standard is being amended so that the main portion applies only to brake fluid, with an added requirement applicable to motor vehicles, that they be equipped either with brake fluid manufactured and packaged in conformity with Standard No. 116, or with petroleum-based or silicone-based brake fluid (new paragraph S5.3).

6. *Resistance to oxidation: preparation.* An amendment to paragraph S6.11.4(b) specifies that the oxidation resistance test is to be conducted not later than 24 hours after the test mixture has been removed from the oven.

7. *Effect on SBR cups: procedure and calculation.* The SAE has also proposed a reduction of the time that the cups and fluid are exposed to oven heat at 70°C. The NHTSA is amending S6.12.4 to reduce exposure time to 70±2 hours, as it has been found that virtually all rubber swell occurs at this temperature during the first 48 hours.

The SAE has also concluded that cups should be retested and remeasured when the base diameters of the tested cups differ by more than

0.10 mm. This agency has determined that averaging four values as the change in base diameter, when a spread greater than 0.10 mm occurs, will result in a more precise determination of whether the requirements of paragraph S5.1.12(a) have been met, and is amending paragraph S6.12.5(a) appropriately.

8. *Typographical errors.* An erroneous standard barometric pressure figure of 750 mm appeared in the subscript of Table III and is being corrected to 760 mm. SAE Standard J1703a, referred to in S7.6, is corrected to read "J1703b."

9. *Interpretations.* Several petitions evidenced confusion over whether sale of fluids manufactured prior to March 1, 1972, will be allowed after that date. Sale of such fluids is permissible on and after March 1, 1972, until supplies are exhausted, with the legal requirement that they conform at time of sale to Standard No. 116 as in effect prior to March 1, 1972.

The agency was also asked whether name of city and zip code is acceptable as the complete mailing address of the distributor, required by paragraph S5.2.2.2(c). A mailing address is considered complete only if it is sufficient for the delivery of mail by the U.S. Postal Service, and containers must be marked accordingly.

Several petitioners asked for a delay to July 1, 1972, of various portions of the labeling requirements of paragraph S5.2.2.2 because of the logistics involved in modifying, in one instance, as many as ninety different labels. A delay in the effective date has not been found to be in the public interest, and the petitions on this point are denied. Gummed labels meeting the requirements of S5.2.2.2, however, may be affixed to these cans until new cans are available.

Finally, several petitioners requested clarification of the container sealing terminology in paragraph S5.2.1. The "inner seal" is the cap liner. Examples of "tamper-proof features" are devices such as a metal insert in the neck of the container, a plastic over-wrap, or a twist-off aluminum cap with a breakaway portion.

In consideration of the foregoing, Motor Vehicle Safety Standard No. 116 in 49 CFR 571.21 is revised. . . .

Effective date: March 1, 1972.

Issued on November 8, 1971.

Charles H. Hartman
Acting Administrator

36 F.R. 21594
November 11, 1971

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 116

Motor Vehicle Brake Fluids

(Docket No. 70–23; Notice 5)

The purpose of this notice is to amend 49 CFR § 571.116, Motor Vehicle Safety Standard No. 116, *Hydraulic Brake Fluids*, to permit certain required information to be placed on any permanent part of brake fluid containers.

Paragraphs S5.2.2.2(b) and S5.2.2.2(d) specify respectively that the name of the packager of the brake fluid, if in code form, and a serial number identifying the packaged lot and date of packaging shall be placed either beneath the distributor's name and mailing address, or on the bottom of the container. Gold Eagle Products Co. has asked if it is permissible to place the information required by S5.2.2.2(b) on the top of square gallon brake fluid containers. Such location is not presently allowed. The Administration, however, has concluded that manufacturers should not be restricted in their choice of location and that if it is more convenient for them to place the required information on the side or top of a container they should be allowed to do so, provided that the information is on a permanent part of the container. Accordingly, the NHTSA is amending the requirements to allow all required certification, marking and labeling information to be placed in any location except on a removable part such as a lid.

In consideration of the foregoing, paragraph S5.2.2.2 of 49 CFR § 571.116, Motor Vehicle Safety Standard No. 116, is revised in part . . . .

Effective date: August 29, 1972. Because the amendment relaxes an existing requirement and creates no additional burden, it is found for good cause shown that an effective date earlier than 180 days after issuance is in public interest.

This notice is issued under the authority of sections 103, 112, and 119 of the National Traffic and Motor Vehicle Traffic Safety Act of 1966 (15 USC 1392, 1401, and 1407) and the delegation of authority at 49 CFR 1.51.

Issued on August 22, 1972.

Douglas W. Toms
Administrator

37 F.R. 17474
August 29, 1972

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 116

Motor Vehicle Brake Fluids

(Docket No. 71–13; Notice 3)

This notice amends Motor Vehicle Safety Standard No. 116, *Motor Vehicle Brake Fluids*, 49 CFR § 571.116, to establish container labeling requirements for those fluids that are currently unregulated by the standard. The requirements are effective July 1, 1973.

The amendment is based upon a notice published March 22, 1972, (37 F.R. 5825). The NHTSA proposed labeling requirements for "central hydraulic system oil" and "silicone-based brake fluid", similar to requirements already in existence for conventional hydraulic brake fluids. The packager would be required to place his name on the container. His name could appear in code form. The packager would also be required to provide the complete name and mailing address of the distributor, a serial number identifying the packaged lot and date of packaging of the fluid, description of the contents, and certain safety warnings.

The comments received generally supported the proposal, and Standard No. 116 is being amended accordingly. The term "central hydraulic system oil" has not been adopted as some central hydraulic systems are designed for use of DOT brake fluids. Instead, the term "hydraulic system mineral oil" is adopted. It is defined as "a mineral-oil-based fluid designed primarily for use in motor vehicle brake systems in which none of the components contacting the fluid are SBR, EPDM, Neoprene, or natural rubber". Paragraphs S3, S5, S5.1, S5.2.2.1, and S5.2.2.2 are being amended in a manner that more clearly evidences the NHTSA's intent that Standard No. 116 applies to all fluid used as brake fluids, but that silicone-based brake fluids and hydraulic system mineral oil are currently excepted from performance, container, and labeling requirements applicable to DOT fluids. A new S5.2.2.3 specifies the labeling requirements for packagers of silicone-based brake fluids and hydraulic system mineral oil, and these generally parallel those required of packagers of DOT fluids. Packagers of hydraulic system mineral oil must furnish the additional warning that the fluid is not compatible with the rubber components of brake systems designed for use with DOT brake fluids.

The amendment also differs from the proposal in reflecting the revision of Standard No. 116 of August 29, 1972 (37 F.R. 17474) that allows information to be placed on a container "in any location except on a removable part such as a lid." Minor changes have been made in the text of the warning on fluid storage so that it is identical with the warning required for DOT fluids.

In consideration of the foregoing, 49 CFR § 571.116, Motor Vehicle Safety Standard No. 116, is amended. . . .

Effective date: July 1, 1973. Because these amendments relate to labeling requirements that do not entail product redesign, an effective date less than 180 days after the issue date is found to be in the public interest.

(Secs. 103, 112, 119, Pub. L. 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1407; delegation of authority at 49 CFR 1.51.)

Issued on: January 4, 1973.

Douglas W. Toms
Administrator

38 F.R. 2981
January 31, 1973

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 116

Motor Vehicle Brake Fluids

(Docket No. 71–13; Notice 4)

This notice responds to a petition for reconsideration of brake fluid container labeling requirements by amending 49 CFR § 571.116 in minor respects.

Motor Vehicle Safety Standard No. 116, *Motor Vehicle Brake Fluids*, was amended on January 31, 1973, (33 F.R. 2981) to establish container labeling requirements for those fluids that are currently unregulated by the standard. Thereafter, a petition for reconsideration of the amendment was filed by General Motors Corporation pursuant to 49 CFR § 553.35. In response to the petition minor amendments are made to the standard.

General Motors believes that the NHTSA has not clearly indicated which mineral oil used in vehicle hydraulic systems must meet Standard No. 116. Hydraulic system mineral oil has been defined in part as a fluid "designed primarily for use in motor vehicle brake systems . . ." GM asserts that it is not clear whether a fluid "for use in a central hydraulic system composed of the power brake boost and the power steering systems must be considered *primarily* as a brake system application or *primarily* as a power steering system application." GM believes that since the power brake system is an auxiliary system whose fluids operate in a different environment than those in the primary system the standard should not include hydraulic boost system mineral oils.

The NHTSA intends the definition of hydraulic system mineral oil to include fluids used in any type of brake system regardless of the configuration. This definition must include fluids used in any hydraulic brake boost unit whose design is such that when a component fails, the boost unit fluid enters the master cylinder reservoir, hence contaminating the entire brake system. Such fluid must meet the applicable requirements of Standard No. 116. Fluids for use in systems where a failure will not introduce them into the master cylinder reservoir are not covered by Standard No. 116. The word "primarily" is being deleted from the definition of hydraulic system mineral oil to remove any doubt on this point.

GM points out that the warning a mineral oil manufacturer is currently required to provide refers to the oil as "brake fluid," in the container warning statements specified by the standard. Since mineral oil is not compatible with conventional or silicone-based brake fluid, GM believes it essential that it not be referred to as "brake fluid". The NHTSA concurs and is granting GM's petition by amending the labeling requirements concerned.

In consideration of the foregoing, 49 CFR § 571.116 Motor Vehicle Safety Standard No. 116 is amended. . . .

Effective Date: July 1, 1973. Because these amendments relate to labeling requirements that do not entail product redesign, an effective date less than 180 days after the issue date is found to be in the public interest.

(Sec. 103, 112, 119, Pub. L. 89–563, 80 Stat 718, 15 USC 1392, 1401, 1407; Delegation of Authority at 38 F.R. 12147).

Issued on: May 11, 1973.

James E. Wilson
Associate Administrator
Traffic Safety Programs

38 F.R. 12922
May 17, 1973

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 116

Motor Vehicle Brake Fluids

(Docket No. 71–13; Notice 6)

This notice amends 49 CFR 571.116, Motor Vehicle Safety Standard No. 116, *Motor Vehicle Brake Fluids*, to specify performance requirements for a low-water-tolerance (DOT 5) grade brake fluid, effective October 1, 1974, and to require a color coding system for all brake fluids and hydraulic system mineral oils, effective May 1, 1975, to safeguard against intermixing of incompatible fluids.

A notice of proposed rulemaking on this subject was published on November 21, 1973 (38 F.R. 32142), and an opportunity afforded for comment. The notice proposed performance requirements for brake fluids of low water tolerance, which would include but not be limited to silicone-based brake fluids. The notice also proposed a minor revision in the test procedures for determining cloudiness and lack of clarity in all brake fluids. Finally, the NHTSA proposed color coding for brake fluids and their containers as an appropriate method to prevent any brake system contamination. As the amendments adopted are substantially similar to those proposed, interested persons may refer to the notice which contains a full discussion of the proposals and the NHTSA's rationale for them.

A substantial number of comments submitted in response objected to either the idea of requiring a color coding system or the actual colors proposed for the different grades of fluid. The NHTSA considers that a properly implemented color coding system of fluids, containers, and reservoirs is an appropriate method of preventing brake system contamination. However, it realizes that sufficient time must be allotted to effect an orderly changeover and, therefore, these requirements have a delayed effective date. Several commenters requested modifications to specific color coding requirements. Citroen asked that the color green be permitted as an optional alternative to red for identifying mineral oils, based on its established use of this color in central hydraulic systems since 1965. This request has been denied in the interest of uniformity to minimize the possibility of inadvertent mixing of incompatible fluids. Several manufacturers of conventional glycol-type fluids stated that corrosion inhibitors and antioxidants often impart a reddish brown or straw color to the completed fluid prohibiting compliance with the proposed color ranges. In view of this information, the color range for DOT 3 and DOT 4 fluids has been broadened to allow variations from clear to amber, except for the container border which must be yellow. Further, it has been determined that visual inspection for color compliance is adequate, and the proposed wavelength bands have been deleted.

The other main issue raised was the use of the term "low water tolerance" when referring to silicone based brake fluids. Many commenters felt that the phrase "water intolerant" would more accurately describe the silicone fluids in light of the fact that the water tolerance test for DOT 5 fluids does not demand the absorption or retention of a specified percentage of water. DOT 5 grade fluid, however, is not limited to silicone based brake fluids. The term "low water tolerance" is found to be the most satisfactory description for a range of fluids potentially meeting the DOT 5 requirements and which may vary in water tolerance from 0.01% to 3.0%.

Several commenters pointed out that the chemical stability test of S6.5.4 is not applicable to DOT 5 fluids. The NHTSA concurs, and finds that the elimination of a chemical stability re-

quirement for DOT 5 fluids will not significantly compromise safety. The standard has been amended accordingly.

The U.S. Army Chemical and Coating Laboratory and Bendix Corporation both submitted comments which requested that the low temperature viscosity requirement be established at a lower temperature, for instance −67° F., or that the maximum viscosity at −40° F. be set at 600 cSt. Both comments were constructive, one relating the operational characteristics of silicone fluids at temperatures of −67° F. and below and the other relating the necessary operational properties for the proper functioning of antilock systems at low temperatures. They are outside the scope of the proposal, however, and the NHTSA will consider these matters in future rulemaking.

In consideration of the foregoing, 49 CFR 571.116, Motor Vehicle Safety Standard No. 116, *Motor Vehicle Brake Fluids*, is amended. . . .

Effective date: October 1, 1974, with certain requirements effective May 1, 1975, as noted therein. Brake fluid of the type regulated by this standard is presently prohibited by the regulations of several States, and evidently is not being produced and sold for commercial purposes. The effect of this amendment, therefore, is to permit what was previously prohibited, and an effective date earlier than 180 days from the date of issuance is found for good cause shown to be in the public interest.

(Secs. 103, 112, 119, Pub. L. 89–563, 80 Stat. 718; 15 U.S.C. 1392, 1401, 1427; delegation of authority at 49 CFR 1.51.)

Issued on August 16, 1974.

James B. Gregory
Administrator

39 F.R. 30353
August 22, 1974

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 116

Motor Vehicle Brake Fluids

(Docket No. 71–13; Notice 8)

This notice partially responds to petitions for reconsideration of amendments to 49 CFR 571.116 Motor Vehicle Safety Standard No. 116, *Motor Vehicle Brake Fluids*, that were published in the *Federal Register* on August 22, 1974 (39 FR 30353, as corrected at 32759). The standard is further amended to delete the requirements that were to have become effective May 1, 1975 for brake fluid color and for a color border around safety warnings on brake fluid container labels.

Standard No. 116 requires effective May 1, 1975, that DOT 3 and DOT 4 fluids be clear to amber in color, DOT 5 be blue, and hydraulic system mineral oil be red. For Motor Company petitioned for a reconsideration of the color requirements, asking that DOT 5 be clear or silver. Officine Alfieri Maserati, S.A. Automobiles Citroen, and U.S. Technical Research Corporation have asked that the color of hydraulic system mineral oil be changed from red to green. Other petitioners requested a delay in the effective date for color coding. Obviously a change in the color of the fluid would require a corresponding change in the color of the borders on container labels.

Consideration of these and other arguments by petitioners have delayed a formal response to the amendments of August 22, 1974. If the NHTSA determines that a petition for change of fluid color has merit, it will propose the change, in order to have the benefit of public comment, rather than amending the standard without notice. In the meantime, to alleviate the problems of manufacturers faced with the immediate need to order container labels, the NHTSA is amending the standard to delete the color requirements for fluid and container labeling. The deletion is only intended to be a temporary one, until the response to the petitions for reconsideration of the amendments of August 22, 1974 is published. A new effective date creating a leadtime of not less than 180 days will then be proposed.

In consideration of the foregoing 49 CFR 571.116 Motor Vehicle Safety Standard No. 116 is amended. . . .

Effective date: March 25, 1975. Because the amendment relieves a restriction and creates no additional burden, it is found for good cause shown that an effective date earlier than 180 days after issuance is in the public interest.

(Sec. 103, 112, 119, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1401, 1427); delegation of authority at 49 CFR 1.51).

Issued on March 19, 1975.

James B. Gregory
Administrator

40 F.R. 13219
March 25, 1975

(Sec. 103, 112, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1401, 1407); delegation of authority at 49 CFR 1.51).

Issued on May 12, 1975.

James B. Gregory
Administrator

40 F.R. 21474
May 16, 1975

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 116

Motor Vehicle Brake Fluids

(Docket No. 71–13; Notice 12)

This notice amends Standard No. 116, *Motor Vehicle Brake Fluids*, to specify color coding requirements for hydraulic brake system fluids, to alter the warnings required on labels, to include a definition for "brake fluid," and to revise the definition of "hydraulic system mineral oil."

These amendments are based on a proposal to amend Standard No. 116 (49 CFR 571.116) issued by the National Highway Traffic Safety Administration (NHTSA) on December 5, 1975 (40 FR 56928). Interested persons were afforded an opportunity to submit comments on the proposal by February 5, 1976, and due consideration has been given to the 15 comments received. The National Motor Vehicle Safety Advisory Council did not take a position on the proposed amendments.

As proposed, paragraphs S1 and S2 of Standard No. 116 are amended to substitute the word "fluid" for the term "brake fluid," since the standard now includes requirements for hydraulic system mineral oils which are not normally called "brake fluids." A definition of the term "brake fluid" is added to the standard in order to clarify the distinction between it and hydraulic system mineral oil.

With regard to the proposed definition of hydraulic system mineral oil, Citroen requested that polychloroprene rubber (CR) be deleted from the list of components designated as incompatible with the mineral oil. The NHTSA has determined that Citroen's comments have merit, since the type of CR used in brake hoses is compatible with hydraulic system mineral oils, unlike the SBR, EPR, and NR materials also listed in the proposed definition. This final rule reflects revision of the definition accordingly.

In addition to changes in the labeling requirements, the notice proposed color coding requirements for both fluids and their containers and closures. After reviewing the comments submitted in response to the proposed amendments, the NHTSA has decided not to adopt the proposed changes in labeling (with one exception) or the proposed color coding of containers and their closures. The NHTSA has concluded that color coding of the fluids, combined with the existing warnings on container labels, is a sufficient safeguard against failures in hydraulic braking systems that may result from the use of improper or contaminated fluids.

The proposed color coding of fluids was generally supported by the commenters, although there were requests for colors different than those specified in the proposal. Burma-Castrol requested that the NHTSA defer color coding of fluids until the International Standards Organization (ISO) establishes standard colors for all motor vehicle fluids. This request is denied since the ISO is not actively developing a color code, and there is no indication that it will issue such a code at any time in the near future. The NHTSA can act immediately to reduce the potential safety hazards created by the use of improper fluids in hydraulic braking systems.

Alfred Teves GMBH requested that the color requirement for DOT 3 and DOT 4 brake fluids be blue instead of the proposed "colorless to amber," in order to distinguish these fluids from motor oil and antifreeze. This request is denied since there are many windshield cleaning solutions and some antifreeze fluids that are blue, and because most domestic brake fluids are currently "colorless to amber."

Volkswagen also requested that DOT 3 and DOT 4 brake fluids be blue in order to assure visibility of the fluids in translucent master cylinder reservoirs. The NHTSA does not con-

sider visibility in master cylinders to be a problem since clear or amber fluids would be visible initially in most cases, or would soon become so, because brake fluids generally darken rapidly with use. The major purpose of the color coding requirements is to permit easy identification of fluids before they are placed in the vehicle, in order to prevent the mixing of an incompatible fluid in a braking system. Volkswagen pointed out that if amber or yellow fluids are mixed with the blue fluids that are currently in many master cylinder reservoirs, the resulting green colored fluid might be mistaken for a hydraulic system mineral oil (by this amendment, hydraulic system mineral oils are required to be green). The NHTSA does not consider this concern justification for a change in the proposed color because, as stated earlier, most brake fluids tend to become darker after they are in use for a short period.

Volkswagen suggested that hydraulic system mineral oils be required to be red in color instead of green to avoid any confusion with mixtures of existing brake fluids that would be green. The NHTSA rejects this suggestion in order to avoid confusion with the synthetic red fluids that must be used in some older brake systems. The addition of the wrong fluid to such vehicles could result in substantial damage to the brake system and potential brake failure.

The U.S. Army Mobility Equipment Research and Development Center requested that hydraulic system mineral oils be required to be colored red, consistent with the Army color code. The Center's comment cited examples of brake failure caused by the inadvertent mixing of incompatible fluids in hydromechanical systems. The NHTSA has determined, however, that inconsistency between the Army color code and the proposed color coding requirements for oils sold commercially should not create a safety problem. Only mineral oils procured specifically for use by the military would be colored red, because § 571.7(c) of NHTSA regulations (49 CFR 571.7(c)) provide that no standard applies to a vehicle or item of equipment manufactured for, and sold directly to, the Armed Forces of the United States in conformity with contractual specifications. If a situation arose in which it was necessary to buy commercial oil for a military vehicle, the oil would be purchased according to label information.

The Brake System Parts Manufacturers Council (BSPMC) reiterated its previous comments to Docket No. 71–13, Notice 5, stating that requirements for color coding of fluids and containers would not enhance safety but would only increase cost. They commented that the matching of a fluid in a master cylinder reservoir by its color would be impossible after a few months since DOT 3 and DOT 4 fluids tend to darken rapidly and thereafter might not be distinguishable from incompatible green hydraulic system mineral oils. They further commented that because master cylinder reservoirs are not required to be color coded with the appropriate fluid, the inadvertent mixing of incompatible fluids would still continue to occur.

The NHTSA agrees that the matching of color coded fluids is difficult under certain conditions. However, the main purpose of the fluid color coding requirements is to enable users to distinguish among various unused brake fluids, rather than to match fluid in a master cylinder with additional fluid. It is particularly important to be able to distinguish fluids when they are in unmarked drums or pressure dispensing containers in garages.

Volkswagen requested that the NHTSA regulate the marketing of DOT 5 brake fluids to prevent their use in vehicles unsuited to DOT 5. Volkswagen takes issue with advertisements stating that DOT 5 fluids are suitable for all vehicles and that they can be mixed with all other types of brake fluids. It contended that DOT 5 fluids cause severe corrosion when added to brake systems containing DOT 3 fluids, and submitted a report of laboratory tests to substantiate this claim. Volkswagen recommended that DOT 5 fluids be excluded from regulation by Standard No. 116.

The request by Volkswagen is repetitious of a petition for reconsideration submitted by Ford Motor Company that was denied by a notice published May 16, 1975 (40 FR 21474). Ford petitioned to revoke the amendments that added DOT 5 brake fluids to the standard, because the fluids "may cause hazardous deterioration of brake systems or their components." The NHTSA

rejected Ford's petition on the basis that the information submitted did not substantiate the claim that DOT 5 fluids are deleterious to some brake systems. Likewise, the NHTSA does not consider the test reports submitted by Volkswagen adequate to simulate actual field use, and field testing in the United States and Panama has demonstrated that mixtures of DOT 5 and DOT 3 fluids do not accelerate corrosion.

It should be understood that the NHTSA considers the question of the compatibility of DOT 5 fluids with brake systems and other brake fluids to be a separate issue from the question whether DOT 5 fluids should be regulated by Standard No. 116. The fact that DOT 5 fluids might cause corrosion in certain systems does not mean that there should not be specified performance requirements for DOT 5 fluids in Standard 116. By its terms Standard No. 116 applies "to all fluid for use in hydraulic brake systems of motor vehicles."

Concerning Volkswagen's alternative request that the NHTSA regulate the marketing and use of DOT fluids, we assume that Volkswagen intended this to be accomplished by the use of additional warnings on the labels of DOT 5 brake fluid containers. Any such labeling changes will have to be dealt with in future rulemaking. Interested persons should submit additional data concerning the compatibility of DOT 5 with various brake systems and other brake fluids, along with any recommended label changes.

The notice proposing these amendments also specified requirements for the color coding of brake fluid containers. Bell Chemical Company, Brake System Parts Manufacturers Council, Gold Eagle and Wagner Corporation opposed the proposed color coded border around the printed warnings on brake fluid containers, on the basis that the color of the border would have no significance to the typical consumer. They commented that the proposed borders would cost approximately one million dollars for printing and that no tangible benefit would be realized. After considering these comments, the NHTSA has decided that the color coded borders should not be required on brake fluid containers. Likewise, the color coded cap requirement is not included in paragraph S5.2.2.4 as was proposed, although the proposed labeling requirement of S5.2.2.5 is made final as S5.2.2.4. It specifies that the labeling requirements of the standard shall be placed on the protective outer container or carton of brake fluids whose inner container is not normally visible during use. Since the color-coded-border requirement is not adopted, the proposed paragraph S5.2.2.6 regarding color tolerance requirements is unnecessary and, therefore, is not included in the amendments.

Eight commenters opposed the proposed color coding requirements for container caps and closure devices. The commenters pointed out that consumers would not be cognizant of the significance of the colored caps, and that procurement of colored caps would result in high costs and require long lead times. It was also noted that the wrong color of cap could easily be inadvertently applied by packagers or switched by users of the brake fluids. Further, they stated that since service stations and shops often mount dispenser pumps on one gallon brake fluid cans in place of their original caps, the purpose of color coded caps would be thwarted in many instances. The NHTSA has concluded that these arguments have merit. The proposed requirements for color coded caps and closures are not included in the amendments.

The proposed labeling changes included specification of the minimum wet boiling point in degrees Celsius as well as Fahrenheit, container capacity in liters as well as gallons, and colored border width in millimeters as well as inches. Classic Chemical supported these proposed labeling changes. Wagner Electric and Bell Chemical opposed them on the basis that metric equivalents do not serve a safety need and should be left to the jurisdiction of the Federal agencies responsible for the "metrication" program.

The agency's authority extends to labeling with safety information, and all available methods to increase the comprehensibility of labeling, including metric equivalents, is justified. Nonetheless, the NHTSA has concluded that the cost of the proposed metric labeling does not justify a change at this time. The proposed changes in S5.2.2.1(c), S5.2.2.2(f) and S5.2.2.2(g)(4) are not adopted.

Classic Chemical objected to the proposed change in the last sentence of paragraph S5.2.1 regarding requirements for container sealing.

The rewording was proposed for the purpose of clarifying the requirement that the container closure be tamper-proof to the extent that it would be obvious to a user that the closure had been previously opened. Classic Chemical commented that the present wording which refers to inclusion of a "tamper proof feature" is preferable to the proposed wording. After reconsideration, the NHTSA has decided that the proposed rewording could result in confusion rather than clarification. Therefore, paragraph S5.2.1 is not amended as was proposed.

Dow Corning Corporation, a manufacturer of DOT 5, a low-water-tolerance silicone brake fluid, earlier suggested that the admonition in S5.2.2.2(g)(3) to keep containers "tightly closed to prevent absorption of moisture" is unnecessary and redundant when applied to water intolerant brake fluids such as DOT 5 fluids. Based on this suggestion, the notice proposing these amendments specified the amendment of S5.2.2.2(g)(3) to read, ". . . to prevent entry of water and other contaminants." Wagner Electric commented that the S5.2.2.2(g)(3) warning label on DOT 3 and DOT 4 containers should not be required to be changed simply because the label does not apply, as worded, to DOT 5 brake fluids. They noted that consumer cost could be greatly reduced if only the labels on DOT 5 fluids are changed. The NHTSA agrees with this suggestion. Paragraph S5.2.2.2(g)(3) is therefore modified to add the following parenthetical: "(The last five words of the second sentence may be omitted from the labeling on DOT 5 containers.)"

Bowes Seal Fast commented that the third warning listed in S5.2.2.2(g) ("Store Brake Fluid Only In Its Original Container . . .") is contrary to the general garage practice of using dispensing containers that are continuously refilled from bulk containers. Bell suggested that warning number (3) be eliminated on the basis that warning number (2) is adequate. The NHTSA considers the dispensing containers to be devices for use rather than for storage, so warning number (3) is not contrary to normal garage practices. The NHTSA disagrees with Bell since warning number (2) concerns contamination of fluids in master cylinders, while warning number (3) pertains to the storage of fluids.

The notice proposing these amendments specified a new consumer warning against accepting containers whose "tamper proof" seals have been broken. Wagner opposed the proposed warning. They noted that metal screw caps on fluid containers are often very tightly fastened, and that consumers could not remove them without pliers to inspect the inner "tamper proof" seal. The tendency would be, according to Wagner, to not inspect the inner seal at the place of purchase. The NHTSA has considered these comments and further evaluated the possible problems of the sale of brake fluid or hydraulic system mineral oil containers refilled with other than approved fluid. It has been determined that the potential safety problem does not warrant the expense of adding another warning of this type to either the container or its outer closure. The proposed new warning, S5.2.2.2(g)(5), is not adopted.

The notice preceding these amendments proposed the amendment of paragraph S6.7.3(a) to specify the phrase "suitable solvent" rather than the solvents presently listed, to be used to inhibit frosting of the exterior surfaces of specimen containers in the test for fluidity and appearance at low temperature. After reconsideration, the NHTSA has decided that this proposed change might only create confusion and should, therefore, not be adopted. This does not mean that manufacturers are restricted to the use of ethanol, isopropanol, or acetone. The obligation of a manufacturer is to ensure that its certification of compliance is not false or misleading in a material respect, and that it has exercised due care in manufacturing to conform to the requirements of Standard No. 116 (15 U.S.C. § 1397 (b)(2)). A manufacturer is not required to follow specifically the test procedures for the standards, but only to ascertain, in the exercise of due care, that its product will conform to the standard's requirements when it is tested by the stated methods.

The NHTSA has determined that these amendments will have a negligible economic impact. It is estimated that the color coding requirements will have an annual cost of approximately $10,000. Because of residual inventories it should take several years before all brake fluids are color coded. After this phasing-in period it is estimated that the amendments will result in the

reducing of aproximately 400 accidents per year, with an annual consumer cost savings of $512,000. The NHTSA has determined that the amendments will have a negligible effect on the environment.

It has been determined that an effective date later than the normal statutory limit of one year is justified for these amendments in order to give manufacturers and packagers sufficient time to exhaust existing supplies of brake system fluids destined for new motor vehicles.

In consideration of the foregoing, Standard No. 116 (49 CFR 571.116) is amended. . . .

Effective date: September 1, 1978.

(Sec. 103, 119, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.50.)

Issued on December 6, 1976.

John W. Snow
Administrator

41 F.R. 54942
December 16, 1976

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 116

Motor Vehicle Brake Fluids
(Docket No. 85-02; Notice 2)

ACTION: Final Rule.

SUMMARY: The purpose of this notice is to amend Federal Motor Vehicle Safety Standard (FMVSS) No. 116, *Motor Vehicle Brake Fluids,* and FMVSS No. 106, *Brake Hoses,* to revise the referee materials and test procedures referenced in portions of those standards. FMVSS No. 116 and FMVSS No. 106 currently reference the referee material (RM) identified as RM-1 fluid by the Society of Automotive Engineers (SAE). However, RM-1 fluid is now commercially unavailable, and is less representative of brake fluids used in vehicles on the road today. The SAE in its January 1980 revision of Standard J1703, "Motor Vehicle Brake Fluid," substituted a new referee material, RM-66-03, in place of RM-1 for use in the J1703 compatibility test. This final rule adopts this revision and references RM-66-03 for use in the compatibility test of Standard No. 106, and the compatibility and fluid chemical stability tests of Standard No. 116. This notice also references a new referee material, TEGME, in the humidification procedure of Standard No. 116, adjusts the water content level and test temperature referenced in the test procedures, and amends the number of sets of stroking test materials in the stroking test procedures. This notice also makes procedural modifications to Standard No. 116's humidification procedure adopted from the SAE, and corrects the description of test procedures used to evaluate brake fluid stroking properties.

EFFECTIVE DATE: Due to the commercial unavailability of RM-1 fluid, this rule is effective May 6, 1986. However, because the agency is concerned that manufacturers who might still be using RM-1 fluid to test their products should be able to use their existing supplies, use of RM-1 fluid may continue until November 3, 1986.

SUPPLEMENTARY INFORMATION: Federal Motor Vehicle Safety Standard (FMVSS) No. 116, *Motor Vehicle Brake Fluids,* and FMVSS No. 106, *Brake Hoses,* specify performance requirements for motor vehicle brake fluids and brake hoses. Included in the performance requirements of Standard No. 106 is a brake fluid compatibility test, and included in Standard No. 116 are compatibility, chemical stability, and humidification tests. Referee materials are used to test specimens of brake hose and brake fluid for compliance with the standards' requirements. These materials provide a basis of comparison between the results of the tests ar l the specifications of the standards. The procedures for the compatibility, chemical stability, and humidification tests currently reference the referee material brake fluid specified by the Society of Automotive Engineers (SAE) in the April 1968 version of SAE Standard J1703b. Standard J1703b, in turn, references a referee material (RM) identified as RM-1. (Standard No. 116's description of SAE Standard J1703b, "Motor Vehicle Brake Fluid," April 1968, is incorrect in that the correct reference should be to J1703b, July 1970. In 1970, the agency proposed to reference test procedures of J1703a, April 1968, in Standard No. 116. Subsequently, NHTSA changed reference from J1703a to J1703b. The effort to make this change inadvertently resulted in showing April 1968, the date of J1703a, as the date of J1703b. This notice corrects the error by referencing J1703b, July 1970.)

This rule amends FMVSS Nos. 116 and 106 to revise the referee materials and test procedures referenced in portions of those standards. The SAE, in its January 1980 and November 1983 revisions of Standard J1703, "Motor Vehicle Brake Fluid," substituted a new referee material, RM-66-03, in place of RM-1 for use in the J1703

compatibility test. This notice adopts this revision and references RM-66-03 for use in the compatibility test of Standard No. 106, and the compatibility and fluid chemical stability tests of Standard No. 116. This notice also references a new referee material, TEGME, in the humidification procedures of Standard No. 116, adjusts the water content level and test temperature referenced in the test procedures, and amends the number of sets of stroking test materials in the stroking test of Standard No. 116. This notice also adopts SAE revisions to FMVSS No. 116's humidification test which had been inadvertently omitted from the amendatory language of the proposed rule, and corrects the description of test procedures used to evaluate brake fluid stroking properties.

Testing Brake Hose/Fluid Characteristics

Brake fluid compatibility is an important factor in establishing brake hose life and strength characterisitcs. The compatibility test of FMVSS No. 106 measures hydraulic brake hose compatibility with brake fluid. The brake hose test specimen is filled with the SAE Compatibility Fluid for a required number of hours at specified temperatures, and is then subjected to constriction and burst strength tests. Currently, RM-1 fluid is referenced in the test procedures for the standard's brake fluid compatibility test.

Under the compatibility requirements of FMVSS No. 116, the compatibiltiy of a brake fluid with an RM fluid is determined. The compatibility fluid that is used in these tests as a referee material should be representative of the fluids found in a braking system in service. The tests measure the compatibility of fluids of different chemical bases by checking whether there are undesirable chemical interactions resulting from the mixture of fluids. Paragraph S6.10 sets out the procedures for evaluating the compatibility of a brake fluid with other liquids used in a hydraulic brake system (i.e., other brake fluids). This section currently references RM-1 fluid as the referee material used in that test procedure.

The humidification tests of FMVSS No. 116 measure the amount of water absorbed by a brake fluid as compared to a reference fluid. The presence of water in a brake system degrades braking performance and safety by lowering the boiling point of brake fluid, increasing the possibility of vapor lock and the corroding of system components, and the depositing of sediment in wheel cylinders that could cause a system malfunction.

Standard No. 116 establishes minimum wet equilibrium reflux boiling points (ERBP's) for different grades of brake fluid, and the test procedures of S6.2 determine the water content and wet ERBP of brake fluid specimens. The current test procedure specifies that sample fluids of RM-1 and the test specimen are to be humidified simultaneously under controlled conditions. The SAE RM-1 fluid is used as the reference fluid that establishes the "endpoint" for humidification. When the water content of the RM-1 fluid is measured to be 3.50 ± 0.05 percent by weight, the test fluid sample is removed from the humidification apparatus. After humidification, the water and ERBP of the sample are determined.

Section 7.2 of FMVSS No. 116 also refers to RM-1 fluid as a reference for measuring the water content of brake fluids.

RM-66-03 Fluid

A notice of proposed rulemaking (NPRM) on this rulemaking action was published on March 7, 1985 (50 FR 9294). The NPRM explained that FMVSS Nos. 106 and 116 currently reference SAE RM-1 Compatibility Fluid in their test procedures. In that notice, the agency announced its tentative finding that the inclusion of RM-1 fluid is no longer desirable for the following reasons.

The agency stated its belief that reference to RM-1 fluid should be changed because manufacture of the fluid has ceased. A new fluid, identified as RM-66-03 Compatibility Fluid, has replaced the RM-1 fluid in test procedures described in the January 1980 and November 1983 revisions of SAE Standard J1703. This new fluid is described by the SAE as a blend of four proprietary polyglycol brake fluids of fixed composition, in equal parts by volume. The four fluids selected comprise three factory-fill and one after-market fluid as follows: DOW HD50-4, DOW 455, Delco Supreme II, and Olin HDS-79.

While RM-1 fluid is not readily available, RM-66-03 fluid is available from the SAE in the blend and formulation developed by the SAE for J1703. The indiviual manufacturers of the four proprietary fluids have indicated to the SAE Brake

Fluids Subcommittee and Reference Materials Subcommittee that the proprietary formulation might be changed in the commercial market, but that the formulations developed for the RM-66-03 fluid would be guaranteed to be available for a minimum five-year period commencing May 1983, i.e., at least until May 1988.

The updated reference to RM-66-03 fluid by the SAE is a result of the termination of the manufacturing of the RM-1 fluid. Several of the ingredients contained in the RM-1 fluid are not available to fluid manufacturers since the materials are no longer used in today's fluids, or have become prohibitively costly to obtain. As a result, manufacturers are unwilling to produce more RM-1 fluid.

In addition, RM-1 fluid is not representative of fluids in service today. The agency stated its belief that revising the referee material used in the compatibility test is warranted since the purposes of that test would be better served by a referee material more representative of today's fluids. Inclusion of RM-1 fluid in FMVSS Nos. 116 and 106 is also undesirable because RM-1 fluid contains toxic materials which require elaborate protective procedures and special handling and manufacturing processes.

In consideration of the foregoing, NHTSA proposed an amendment to FMVSS Nos. 106 and 116 to substitute new referee materials for the compatibility and humidification tests. For Standard No. 106's compatibility requirement and test procedures (S5.3.9 and S6.7), and Standard No. 116's compatibility (6.10), fluid chemical stability (6.5), and water content (7.2) tests, the new referee material was proposed to be RM-66-03 fluid as described in the January 1980 version of SAE Standard J1703.

Seven commenters responded to the NPRM. Each commenter agreed with the proposal to reference RM-66-03 fluid in FMVSS Nos. 106 and 116. General Motors Corporation (GM) and Chrysler Corporation agreed with the agency's tentative conclusion that the new referee material would be more available and compatible with current brake fluids than RM-1 fluid. Other commenters believed that the change would be practical and reasonable.

NHTSA has considered the comments to the NPRM and has decided to amend FMVSS Nos. 106 and 116 to reference RM-66-03 compatibility fluid. One slight change has been made to the NPRM's proposal. The NPRM proposed to reference the RM-66-03 fluid as described in the January 1980 revision of SAE Standard J1703. This rule will reference RM-66-03 fluid as described in the November 1983 revision of J1703. The two SAE revisions of J1703 are identical in their descriptions of RM-66-03; the agency is making this change in order to keep FMVSS Nos. 106 and 116 current by referencing the more recent SAE standard.

Use of the RM-66-03 fluid in the test procedures of Standards Nos. 116 and 106 should have a beneficial impact on safety. Since the RM-1 compatibility fluid currently referenced in FMVSS Nos. 106 and 116 is not commercially available, ascertaining whether hoses and fluids comply with certain requirements related to compatibility and boiling points is difficult. Amending the standards to allow the use of RM-66-03 fluid in place of RM-1 provides a readily available compatibility fluid for the compliance tests which is more representative of fluids used in today's vehicles.

TEGME, Brake Fluid Grade

In humidification test procedures under FMVSS No. 116, the referee material fluid is used as a reference to determine when to terminate the humidification procedure. Currently, RM-1 fluid is used as this referee material. NHTSA proposed to amend Standard No. 116 to reference a new referee fluid, triethylene glycol monomethyl ether (TEGME), brake fluid grade, as the referee material noted in Standard No. 116's procedures for a brake fluid's wet equilibrium reflux boiling point (S6.2). TEGME has been referenced by the SAE in J1703, January 1980, and J1703, November 1983, as the referee material used in the humidification test procedure.

In addition to referencing the TEGME material, the agency also proposed to amend S6.2 of FMVSS No. 116 to adjust the final water content of the referee material fluid to 3.70% water (instead of the current requirement of 3.5%), change the test temperature to 50°C. (from 23°C.), and add a cooling period for the sealed jar sample. As explained in the NPRM, those changes (use of TEGME fluid, change in water pickup and test temperature, and the cool-down to room temperature) were proposed as part of the overall changes adopted from SAE J1703 procedures.

All but one of the commenters to the notice supported the changes to the TEGME fluid. Commenters believed that the changes would simplify the test procedures and make them more cost effective.

In its comment on the NPRM, Union Carbide questioned whether there are adequate data to show that the new humidification test procedure will produce comparable test results when applied to DOT-4 and DOT-5 brake fluids. That commenter suggested that NHTSA reconsider adopting the SAE J1703, January 1980 humidification test method or adopt it as an alternative to the current method that uses RM-1 fluid until complete comparative testing could be performed.

The agency does not agree with Union Carbide that the humidification test method of SAE J1703, January 1980 should not be adopted as the new Standard No. 116 test procedure. The TEGME fluid is capable of absorbing a measurable amount of water in a given time and is only used as a reference to determine when to terminate the humidification process. Under the humidification test procedure, samples of brake fluid and TEGME are humidified simultaneously until a measured quantity of fluid is picked up in the TEGME. When the water content of the TEGME fluid reaches 3.7 percent, the brake fluid test specimens are removed from the test apparatus and their water contents and ERBP's are measured. TEGME, the referee material used in the humidification procedure, thus serves only to establish the end point of a test procedure.

The 3.7 percent TEGME water pickup (at 50°C) corresponds to the 3.5 percent water pickup (at 23°C) of the referee fluid (RM-1) used previously to determine the end point of the humidification procedure. The agency has determined that DOT-3 fluid picks up the same amount of water when humidified under procedures which use TEGME as the referee material as it does when humidified under procedures using RM-1. Therefore, the agency believes that the water pickup of test fluids, including DOT-4 and DOT-5 fluids, would not be affected by the change to TEGME. Accordingly, NHTSA is amending FMVSS No. 116 to reference the TEGME referee material.

The NPRM proposed to reference the TEGME fluid as described in the January 1980 revision of Standard J1703. This rule will instead reference TEGME as described in the November 1983 revision of J1703. The two SAE revisions of J1703 are identical in their descriptions of TEGME; the agency is making this change in order to keep FMVSS No. 116 current by referencing the more recent SAE standard.

Humidification Test Procedures

All commenters supported the additional changes to the humidification procedure of S6.2 adopted from SAE Standard J1703. This rule adopts the proposed changes to S6.2 and adjusts the final water content of the referee material fluid to 3.70%, changes the test temperature to 50°C, and adds a cooling period for the sealed jar sample.

Other changes to the humidification procedure were suggested in the comments to the NPRM. GM and Union Carbide Corporation pointed out that while NHTSA proposed to adopt the humidification test procedures from SAE J1703, the procedural modifications proposed in the amendatory language differed slightly from the SAE standard. GM suggested changing FMVSS No. 116's humidification procedure to agree with that of SAE J1703, January 1980 in order to facilitate testing. The following changes were suggested: S6.2.1 should be revised to require 150 ml. samples of brake fluid and TEGME instead of the proposed 100 ml. samples; S6.2.3 should be revised to eliminate ammonium sulfate from the list of reagents and materials and to specify distilled water and TEGME; S6.2.4 should be revised to load the dessicators with 450 ml. of distilled water instead of the ammonium sulfate/distilled water slurry; and S6.2.5 should be revised to use 150 ml. samples of the brake fluid and TEGME instead of the proposed 100 ml. samples.

As evidenced by the GM and Union Carbide comments, it was clear that the agency intended to facilitate testing by adopting the overall changes to the humidification test from SAE J1703. Therefore, NHTSA agrees that those additional changes should be incorporated into this final rule. This rule amends S6.2.1, S6.2.3, S6.2.4 and S6.2.5 to correct the minor omissions noted above. Further, S6.2.2 is revised to clarify that distilled water would be substituted for the salt slurry in Figure 3 of FMVSS No. 116, *Humidification Apparatus,* when TEGME is used as the referee material.

Stroking Test

The stroking test in FMVSS No. 116 checks the lubricity effect of a brake fluid on rubber components. The NPRM explained that the SAE had determined, in its revision of J1703, January 1980, that three sets of test material are sufficient to analyze the adequacy of test results. The notice announced that, based on NHTSA's tentative agreement with that SAE conclusion and its belief that compliance testing costs would be reduced by that change without an adverse affect on safety, the agency was proposing to amend the requirements of S5.1.13 and S6.13 to require testing of only three sets of test material (consisting of wheel cylinders, drums, shoe assemblies, etc.) instead of four sets, and eight new brake cups instead of 10. Since NHTSA proposed to reduce the number of cups tested, a reduction in the number of cups checked for unsatisfactory operating condition was also proposed.

All comments supported the agency's proposal to revise the stroking test procedures. The commenters believed that the changes proposed in the NPRM would simplify the test procedures and make them more cost effective. NHTSA agrees, and has revised S5.1.13 and S6.13 as proposed in the NPRM.

In addition, this rule makes several changes to the stroking test procedures in FMVSS No. 116 which directly relate to the agency's adoption of the SAE stroking test revision. Currently, S6.13.2 describes the apparatus and equipment used for the stroking test and refers to figures in SAE Standard J1703b which depict stroking apparatuses. Figure 1 of J1703b depicts four sets of drum and shoe assemblies. Since NHTSA has reduced the number of sets of test materials to three, the agency believes that the description of the test apparatuses and arrangement of test materials should also be revised to reflect this change. The description of the apparatuses used in the stroking test is changed only to clarify that three sets of materials are used, instead of four.

The following related revisions to the stroking test procedure are necessary to facilitate the change to three sets of materials. Paragraph S6.13.4(c) describes the preparation and assembly of test apparatuses. When a shoe and drum type apparatus is used, S6.13.4(c) specifies a 23 mm. stroke length, based on output piston movement of four sets of wheel cylinders. Stroke length refers to the distance traveled by the master cylinder piston to displace a certain volume of fluid in the test system which, in turn, forces the wheel cylinder pistons to travel a specified distance. Since the stroking test is revised to require only three sets of materials, the stroke length of the master cylinder would no longer be 23 mm.

This rule deletes reference in S6.13.4(c) to exact piston displacement measurements and a 23 mm. stroke length. The agency has determined that it is not necessary to specify master cylinder and wheel cylinder piston travel since those values are determined by the characteristics of the system which are specified in the standard (i.e., dimensions of the master cylinder and wheel cylinders, and pressure). The stroking test apparatus is a closed hydraulic system; pressure of 1000 pounds per square inch (psi) is generated at the outlet port of the master cylinder, and all pistons have the same diameters of $1^{1}/_{8}$ inch. Given the above, displacement of the wheel cylinders is directly proportional to the displacement of the master cylinder, and in the given test apparatus the stroke length of the master cylinder is dependent on system pressure. Stroke length would therefore be adjusted by the characteristics of the system from the former value of 23 mm. to a value proportioned for three wheel cylinders.

Since the agency is eliminating exact wheel cylinder piston travel measurements and is specifying that only three sets of test materials are required in the stroking test, this rule also deletes reference in S6.13.4(c) to Figure 4 of SAE Standard J1703b. That figure illustrated the approximate pressure buildup versus the master cylinder piston movement, and was based on the use of four sets of materials. S6.13.4(c) would continue, however, to specify that the pressure buildup is relatively low during the first part of the stroke, in order to avoid damage of the master cylinder's primary cup by ensuring that the primary cup passes the compensating port at a relatively low pressure.

Typographical Errors

This notice corrects the typographical errors in S5.1.9(a), S5.1.9(b) and S5.1.12 of Standard No. 116, as proposed in the NPRM.

Effective Date

This rule is effective May 6, 1986. As explained in the NPRM, the agency finds good cause for this expedited effective date because the RM-1 fluid used in the testing procedures of FMVSS Nos. 116 and 106 is commercially unavailable. Use of the RM-66-03 fluid will facilitate compliance testing by utilizing a referee material that is currently available and more representative of fluids in service. However, because the agency is concerned that manufacturers who might still be using RM-1 fluid to test their products should be able to use their existing supplies, use of RM-1 fluid may continue until November 3, 1986, i.e., 180 days after publication of this rule.

In accordance with the above provision permitting the use of RM-1 during the interim period, this rule describes separate test procedures appropriate for use with RM-1 and for the new referee materials (i.e., RM-6603 and TEGME). Test procedures for RM-1 usage are specified for those manufacturers who choose to use that fluid during the 180-day period.

Economic Effects

NHTSA has concluded that this final rule does not qualify as a "major rule" within the meaning of Executive Order 12291, and that it is not "significant" within the meaning of the Department of Transportation's regulatory procedures. Preparation of a regulatory impact analysis is not necessary for this rulemaking. The agency has determined further that the effects of this rulemaking are minor and that a full regulatory evaluation is not warranted. The rule references referee materials in Standards Nos. 116 and 106 that are readily available to manufacturers of brake fluids and brake hoses.

The agency believes that manufacturers will benefit by the change to RM-66-03 fluid and TEGME fluid in FMVSS No. 116 and RM-66-03 fluid in FMVSS No. 106. The fluids are readily available whereas RM-1 is not, and are more representative of fluids in service today. The agency knows of no problems resulting from tests onducted with the RM-66-03 and TEGME fluids.

Some cost savings would be realized with this amendment. The utilization of RM-66-03 fluid will reduce the costs of fluids used in compliance testing without sacrificing adequate test results. For example, as cited in the NPRM, when last available, RM-1 fluid cost approximately $27.00 per quart. The cost of RM-66-03 fluid is approximately $8.00 per quart.

Cost savings will be realized by the use of the TEGME fluid in the humidification tests of FMVSS No. 116. The TEGME fluid costs approximately $3.30 per quart. Further, using the TEGME fluid in compliance testing would conserve the more expensive supply of RM-66-03 brake fluid material.

The change in the stroking test procedures will also result in some cost savings. The costs related to the quantities of materials tested will be reduced about 25 percent.

Any changes to Standard Nos. 106 and 116 referencing the RM-66-03 and TEGME fluids and reducing the number of test materials used in the stroking test will not significantly affect manufacturers of brake hoses and referee materials. These manufacturers may benefit from some cost savings resulting from the changes to the standards, but will not otherwise be significantly affected by this amendment.

In consideration of the foregoing, 49 CFR 571.06, *Brake Hoses,* is amended as follows:

1. S5.3.9 is revised to read as follows:

S5.3.9 *Brake Fluid Compatibility, Construction, and Burst Stength.* Except for brake hose assemblies designed for use with mineral or petroleum-based brake fluids, a hydraulic brake hose assembly shall meet the constriction requirement of S5.3.1 after having been subjected to a temperature of 200°F for 70 hours while filled with SAE RM-66-03 Compatibility Fluid, as described in Appendix A of SAE Standard J1703, November 1983, "Motor Vehicle Brake Fluid," November 1983 (S6.7). It shall then withstand water pressure of 4,000 psi for 2 minutes and thereafter shall not rupture at less than 5,000 psi (S6.2). (SAE RM-1 Compatibility Fluid, as described in Appendix A of SAE Standard J1703b, "Motor Vehicle Brake Fluid," July 1970, may be used in place of SAE RM-66-03 until November 3, 1986.

2. Paragraph S6.7.1(a) is revised to read as follows:

S6.7.1 *Preparation.*

(a) Attach a hose assembly below a 1-pint reservoir filled with 100 ml of SAE RM-66-03 Compatibility Fluid as shown in Figure 2. (SAE RM-1

Compatibility Fluid, as described in Appendix A of SAE Standard J1703b, "Motor Vehicle Brake Fluid," July 1970, may be used in place of SAE RM-66-03 until November 3, 1986.

* * * * * *

§ 571.116 [Amended]

In consideration of the foregoing, 49 CFR 571.116, *Motor Vehicle Brake Fluids,* is amended as follows:

1. S5.1.9 is revised to read as follows:

S5.1.9 *Water Tolerance.*

(a) *At low temperature.* When brake fluid is tested according to S6.9.3(a)—

(1) * * *

(b) At 60°C (140°F). When brake fluid is tested according to S6.9.3(b)—

(1) * * *

2. S5.1.12 is revised to read as follows:

S5.1.12 *Effects on cups.* When brake cups are subjected to brake fluid in accordance with S6.12—

* * * * * *

3. S5.1.13 is revised to read as follows:

S5.1.13 *Stroking properties.* When brake fluid is tested according to S6.13—

* * * * * *

(c) The average decrease in hardness of seven of the eight cups tested (six wheel cylinder and one master cylinder primary) shall not exceed 15 IRHD. Not more than one of the seven cups shall have a decrease in hardness greater than 17 IRHD;

(d) None of the eight cups shall be in an unsatisfactory operating condition as evidenced by stickiness, scuffing, blisters, cracking, chipping, or other change in shape from its original appearance;

(e) None of the eight cups shall show an increase in base diameter greater than 0.90 mm (0.035 inch):

(f) The average lip diameter set of the eight cups shall not be greater than 65 percent:

* * * * * *

4. S6 is revised to read as follows:

S6. *Test procedures.* Until November 3, 1986, SAE RM-1 Compatibility Fluid, as described in Appendix A of SAE Standard J1703b, "Motor Vehicle Brake Fluid," July 1970, may be used in place of TEGME and SAE RM-66-03 in the humidification (S6.2), chemical stability (S6.5.4), and compatibility (S6.10) test procedures, and as a referee material in S7.2.

* * * * * *

5. S6.2.1 is revised to read as follows:

S6.2.1 *Summary of the procedure.*

(a) *With TEGME:* Except as provided in paragraph S6.2.1(b), a 150 ml sample of the brake fluid is humidified under controlled conditions; 150 ml of SAE triethylene glycol monoethyl ether, brake fluid grade, referee material (TEGME) as described in Appendix E of SAE Standard J1703, November 1983, "Motor Vehicle Brake Fluid," November 1983, is used to establish the end point for humidification. After humidification the water content and ERBP of the brake fluid are determined.

(b) *With RM-1:* Until November 3, 1986, SAE RM-1 Compatibility Fluid, as described in Appendix A of SAE Standard J1703b, "Motor Vehicle Brake Fluid," July 1970, may be used with the following procedures. See S6. A 100-ml. sample of the brake fluid is humidified under controlled conditions: 100 ml of SAE RM-1 Compatibility Fluid is used to establish the end point for humidification. After humidification the water content and ERBP of the brake fluid are detemined.

6. S6.2.2 is revised to read as follows:

S6.2.2 *Apparatus for humidification.* (See Figure 3. Until November 3, 1986, a manufacturer may use either TEGME or RM-1 Compatibility Fluid. If TEGME is used, substitute 450 ml. of distilled water in place of the salt slurry and disregard the "45±7mm" dimension.)

Test apparatus shall consist of—

* * * * * *

7. S6.2.3 is revised to read as follows:

S6.2.3 *Reagents and Materials.*

(a) Distilled water, see S7.1.

(b) Except as provided in S6.2.3(c), SAE TEGME referee material.

(c) Until November 3, 1986, a manufacturer may use either TEGME or SAE RM-1 Compatibility Fluid. See S6.

(d) If RM-1 is used, also use ammonium sulfate $(NH_4)_2SO_4$, Reagent or A.C.S. grade.

8. S6.2.4 is revised to read as follows:

S6.2.4 *Preparation of Apparatus.*

(a) *With TEGME:* Except as provided in S6.2.4(b), lubricate the ground-glass joint of the desiccator. Pour 450±10 ml of distilled water into each desiccator and insert perforated porcelain desiccator plates. Place the desiccators in an oven with temperature controlled at 50±1°C (122±1.8°F) throughout the humidification procedure.

(b) *With RM-1:* Until November 3,1986, a manufacturer may use either TEGME or SAE RM-1 Compatibility Fluid. See S6. Lubricate the ground-glass joint of the desiccator. Load each desiccator with 450±25 grams of the ammonium sulfate and add 125±10 ml. of distilled water. The surface of the salt slurry shall lie within 45±7 mm. of the top surface of the desiccator plate. Place the desiccators in an area with temperature controlled at 23±2° C (73.4±3.6°F) throughout the humidification procedure. Condition the loaded desiccator with the covers on and stoppers in place at least 12 hours before use. Use a fresh charge of salt slurry for each test.

9. S6.2.5 is revised to read as follows:

S6.2.5 *Procedure.*

(a) *With TEGME:* Except as provided by S6.2.5(b), pour 150±5 ml of the brake fluid into an open corrosion test jar. Place the jar into a desiccator. Prepare in the same manner a duplicate test fluid sample and two duplicate specimens of the SAE TEGME referee material (150±5 ml of TEGME in each jar). The water content of the SAE TEGME fluid is adjusted to 0.50±0.05 percent by weight at the start of the test in accordance with S7.2. Place these samples in the dessicators in the 50°C (122°F) controlled oven and replace desiccator covers. At intervals, during oven humidification, remove the rubber stopper in the top of each desiccator containing SAE TEGME fluid. Using a long needled hypodermic syringe, take a sample of not more than 2 ml from each jar and determine its water content. Remove no more than 10 ml of fluid from each SAE TEGME sample during the humidification procedure. When the water content of the SAE fluid reaches 3.70± 0.05 percent by weight (average of the duplicates), remove the two test fluid specimens from their desiccators and promptly cap each jar tightly. Allow the sealed jars to cool for 60–90 minutes at 23±5°C (73.4±9°F). Measure the water contents of the test fluid specimens in accordance with S7.2 and determine their ERBP's in accordance with S6.1. If the two ERBP's agree within 4°C (8°F), average them to determine the wet ERBP: otherwise repeat and average the four individual ERBP's as the wet ERBP of the brake fluid.

(b) *With RM-1:* Until November 3, 1986, a manufacturer may use either TEGME or SAE RM-1 Compatibility Fluid. See S6. Pour 100±1 ml of the brake fluid into a corrosion test jar. Promptly place the jar into a desiccator. Prepare duplicate test sample, and two duplicate specimens of the SAE RM-1 Compatibililty Fluid. Adjust water content of the SAE RM-1 fluid to 0.50±0.05 percent by weight at the start of the test in accordance with S7.2. At intervals remove the rubber stopper in the top of each desiccator containing SAE RM-1 fluid. Using a long needled hypodermic syringe, take a sample of not more than, 2 ml from each jar and determine its water content. Remove no more than 10 ml of fluid from each SAE RM-1 sample during the humidification procedure. When the water content of the RM-1 fluid reaches 3.50±0.05 percent by weight (average of the duplicates), remove the two test fluid specimens from their desiccators and promptly cap each jar tightly. Measure the water contents of the test fluid specimens in accordance with S7.2 and determine their ERBP's in accordance with S6.1 through S6.1.5. If the two ERPB's agree within 4°C. (8°F.), average them to determine the wet ERBP; otherwise repeat and average the four individual ERBP's as the wet ERBP of the brake fluid.)

10. S6.5.4.1 is revised to read as follows:

S6.5.4.1 *Materials.*

(a) Except as provided in S6.5.4.1(b), SAE RM-66-03 Compatibility Fluid, as described in Appendix A of SAE Standard J1703, November 1983, "Motor Vehicle Brake Fluid," November 1983.

(b) Until November 3, 1986, a manufacturer may use either SAE RM-66-03, or SAE RM-1 Compatibility Fluid as described in Appendix A of SAE Standard J1703b, "Motor Vehicle Brake Fluid," July 1970. See S6.

11. Paragraph S6.5.4.2 is revised to read as follows:

S6.5.4.2 *Procedure.*

(a) *With RM-66-03:* Except as provided in S6.5.4.2(b), mix 30±1 ml of the brake fluid with 30±1 ml of SAE RM-66-03 Compatibility Fluid in a boiling point flask (S6.1.2(a)). Determine the initial ERBP of the mixture by applying heat to the flask so that the fluid is refluxing in 10±2 minutes at a rate of excess of 1 drop per second, but not more than 5 drops per second. Note the maximum fluid temperature observed during the first minute after the fluid begins refluxing at a rate in excess of 1 drop per second. Over the next 15±1 minutes, adjust and maintain the reflux rate at 1 to 2 drops per second. Maintain this rate for an additional 2 minutes, recording the average value of four temperature readings taken at 30-second intervals as the final ERBP.

(b) *With RM-1:* Until November 3, 1986, a manufacturer may use either RM-66-03, or SAE RM-1 Compatibility Fluid as described in Appendix A of SAE Standard J1703b, "Motor Vehicle Brake Fluid, " July 1970. See S6.

(c) Thermometer and barometic corrections are not required.

12. S6.10.1 is revised to read as follows:

S6.10.1 *Summary of the procedure.*

(a) *With RM-66-03:* Except as provided in S6.10.1(b), brake fluid is mixed with an equal volume of SAE RM-66-03 Compatibility Fluid, then tested in the same way as for water tolerance (S6.9) except that the bubble flow time is not measured. This test is an indication of the compatibility of the test fluid with other motor vehicle brake fluids at both high and low temperatures.

(b) *With RM-1:* Until November 3, 1986, a manufacturer may use either RM-66-03, or SAE RM-1 Compatibility Fluid as described in Appendix A of SAE Standard J1703b,"Motor Vehicle Brake Fluid," July 1970. See S6. This test is an indication of the compatibility of the test fluid with other motor vehicle brake fluids at both high and low temperatures.

13. Paragraph S6.10..2(e) is revised to read as follows:

S6.10.2 *Apparatus and materials.*

* * * * * *

(e) Except as provided in S6.10.2(f), *SAE RM-66-03 Compatibility Fluid.* As described in Appendix A of SAE Standard J1703, November 1983, "Motor Vehicle Brake Fluid," November 1983.

(f) Until November 3, 1986, a manufacturer may use either RM-66-03, or SAE RM-1 Compatibility Fluid as described in Appendix A of SAE Standard J1703b, "Motor Vehicle Brake Fluid," July 1970. See S6.

14. Paragraph S6.10.3(a) is revised to read as follows:

S6.10.3 *Procedure.*

(a) *At low temperature.*

(1) *With RM-66-03:* Except as provided in S6.10.3(a)(2), mix 50 ± 0.5 ml of brake fluid with 50 ± 0.5 ml of SAE RM-66-03 Compatibility Fluid. Pour this mixture into a centrifuge tube and stopper with a clean dry cork. Place tube in the cold chamber maintained at minus 40 ± 2°C (minus $40° \pm 3.6$°F). After 24 ± 2 hours, remove tube, quickly wipe with a clean lint-free cloth saturated with ethanol (isopropanol when testing DOT 5 fluids) or acetone. Examine the test specimen for evidence of sludging, sedimentation, or crystallization. DOT 3 and DOT 4 test fluids shall also be examined for stratification.

(2) *With RM-1.* Until November 3, 1986, a manufacturer may use either RM-66-03, or SAE RM-1 Compatibility Fluid as described in Appendix A of SAE Standard J1703b, "Motor Vehicle Brake Fluid," July 1970. See S6.

* * * * * *

15. S6.13.1 is revised to read as follows:

S6.13.1 *Summary of the procedure.* Brake fluid is stroked under controlled conditions at an elevated temperature in a simulated motor vehicle hydraulic braking system consisting of three slave wheel cylinders and an actuating master cylinder connected by steel tubing. Referee standard parts are used. All parts are carefully cleaned, examined, and certain measurements made immediately prior to assembly for test. During the test, temperature, rate of pressure rise, maximum pressure, and rate of stroking are specified and controlled. The system is examined periodically during stroking to assure that excessive leakage of fluid is not occurring. Afterwards, the system is torn down. Metal parts and SBR cups are examined and remeasured. The brake fluid and any resultant sludge and debris are collected, examined, and tested.

16. S6.13.2 is revised to read as follows:

S6.13.2 *Apparatus and equipment.*

Either the drum and shoe type of stroking apparatus (see Figure 1 of SAE Standard J1703b) except using only three sets of drum and shoe assemblies, or the stroking fixture type apparatus as shown in Figure 2 of SAE J1703, November 1983, with the components arranged as shown in Figure 1 of SAE J1703, November 1983. The following components are required.

(a) *Brake assemblies.* With the drum and shoe apparatus: three drum and shoe assembly units (SAE RM-29a) consisting of three forward brake shoes and three reverse brake shoes with linings and three front wheel brake drum assemblies with assembly component parts. With stroking fixture type apparatus: three fixture units including appropriate adapter mounting plates to hold brake wheel cylinder assemblies.

* * * * * *

(c) *Heated air bath cabinet.* An insulated cabinet or oven having sufficient capacity to house the three mounted brake assemblies or stroking fixture assemblies, master cylinder, and necessary connections. A thermostatically controlled heating

system is required to maintain a temperature of 70° ± 5°C (158° ± 9°F) or 120° ± 5°C (248° ± 9°F). Heaters shall be shielded to prevent direct radiation to wheel or master cylinder.

* * * * * *

(f) *Wheel cylinder (WC) assemblies (SAE RM-14a).* Three unused cast iron housing straight bore hydraulic brake WC assemblies having diameters of approximately 28 mm ($1^1/_8$ inch) for each test. Pistons shall be made from unanodized SAE AA 2024 aluminum alloy.

* * * * * *

17. Paragraph S6.13.3(a) is revised to read as follows:

S6.13.3 *Materials.*

(a) *Standard SBP brake cups.* Six standard SAE SBR wheel cylinder test cups, one primary test cup, and one secondary MC test cup, all as described in S7.6, for each test.

* * * * * *

18. Paragraph S6.13.4(c) is revised to read as follows:

S6.13.4 *Preparation of test apparatus.*

* * * * * *

(c) *Assembly and adjustment of test apparatus.*

When using a shoe and drum type apparatus, adjust the brake shoe toe clearances to 1.0 ± 0.1 mm (0.040 ± 0.004 inch). Fill the system with brake fluid, bleeding all wheel cylinders and the pressure gage to remove entrapped air. Operate the actuator manually to apply a pressure greater than the required operating pressure and inspect the system for leaks. Adjust the actuator and/or pressure relief valve to obtain a pressure of 70 ± 3.5 kg./sq. cm. (1,000 ± 50 psi). A smooth pressure-stroke pattern is required when using a shoe and drum type apparatus. The pressure is relatively low during the first part of the stroke and then builds up smoothly to the maximum stroking pressure at the end of the stroke, to permit the primary cup to pass the compensating hole at a relatively low pressure. Using stroking fixtures, adjust the actuator and/or pressure relief valve to obtain a pressure of 70 ± 3.5 kg./sq. cm. (1,000 ± 50 psi).

Adjust the stroking rate to 1,000 ± 100 strokes per hour. Record the fluid level in the master cylinder standpipe.

19. S6.13.6(b) and S6.13.6(c) are revised to read as follows:

S6.13.6 *Calculation.*

* * * * * *

(b) Calculate the average decrease in hardness of the seven cups tested, as well as the individual values (see S5.1.13(c)).

(c) Calculate the increases in base diameters of the eight cups (see S5.1.13(e)).

20. The first sentence of Paragraph S6.13.6(d) is revised to read as follows:

(d) Calculate the lip diameter interference set for each of the eight cups by the following formula and average the eight values (see S5.1.13(f)).

* * * * * *

21. S7.2 is revised to read as follows:

S7.2 *Water content of motor vehicle brake fluids.* Use analytical methods based on ASTM D1123–59, "Standard Method of Test for Water in Concentrated Engine Antifreezes by the Iodine Reagent Method," for determining the water content of brake fluids, or other methods of analysis yielding comparable results. To be acceptable for use, such other method must measure the weight of water added to samples of the SAE RM-66-03 and TEGME Compatibility Fluids within ±15 percent of the water added for additions up to 0.8 percent by weight, and within ±5 percent of the water added for additions greater than 0.8 percent by weight The SAE RM-66-03 Compatibility Fluid used to prepare the samples must have an original ERBP of not less than 205°C (401°F) when tested in accordance with S6.1. The SAE TEGME fluid used to prepare the samples must have an original ERBP of not less than 240°C (464°F) when tested in accordance with S6.1.

Until November 3, 1986, a manufacturer may use either RM-66-03 and TEGME or SAE RM-1 Compatibility Fluid. See S6. To be acceptable for use, such other method must measure the weight of water added to samples of the SAE RM-1 Compatibility Fluid within ±15 percent of the water added for additions up to 0.8 percent by weight, and within ±5 percent of the water added for additions greater than 0.8 percent by weight. The SAE RM-1 Compatibility Fluid used to prepare the samples must have an original ERBP of not less than 182°C (360°F) when tested in accordance with S6.1.

Issued on April 29, 1986.

Diane K. Steed
Administrator

51 F.R. 16694
May 6, 1986

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 116

(Docket No. 87-07; Notice 3)

ACTION: Final rule.

SUMMARY: This final rule amends Standard No. 116, *Motor Vehicle Brake Fluids,* to permit the use of permanently affixed labels (e.g., paper or plastic labels) on containers of brake fluid and hydraulic system mineral oil to satisfy the container information requirements of the standard. This rule also establishes procedures for testing the methods used to mark or label all such containers to ensure that the required information remains legible and present on the container after being soaked with the fluid or oil.

DATES: The effective date of this final rule is December 27, 1988.

SUPPLEMENTARY INFORMATION: On April 3, 1987, the National Highway Traffic Safety Administration (NHTSA) published a notice of proposed rulemaking (NPRM) relating to Standard No. 116's information requirements for containers of brake fluid and hydraulic system mineral oil (52 FR 10775). That notice proposed to revise those requirements to permit the use of permanently affixed labels (e.g., paper or plastic labels) on such containers and set conditions and procedures for testing the labeling or marking of all containers with the information required by the standard. This action was commenced in response to two related petitions for rulemaking submitted separately by the Chemical Specialties Manufacturers Association (CSMA) and the firm of Arent, Fox, Kintner, Plotkin & Kahn (Arent), on behalf of companies engaged in the manufacture and sale of motor vehicle brake fluid.

This rule amends FMVSS No. 116 as proposed in the NPRM. A new paragraph S6.14 is added to the standard setting forth the test conditions and procedures under which the permanency and legibility of the information is evaluated. Paragraphs S5.2.2.2 and S5.2.2.3 of the standard are amended to permit packagers the option of affixing a label to their containers which would be legible and incapable of being removed without its destruction after exposure to the test conditions of S6.14.

Background

Standard No. 116 currently requires certain information to be clearly and indelibly marked on all containers of brake fluid and hydraulic system mineral oil. Under paragraph S5.2.2.2 of the standard, persons who fill containers with brake fluid that are subsequently distributed for retail sale (whom the standard refers to as "packagers" (S4)) must furnish the information "clearly and indelibly marked" on each container. The required information includes a certification that the fluid conforms to Standard No. 116, the name of the packager and name and complete mailing address of the distributor, information (a serial number) identifying the packaged lot and date of packaging and the type of brake fluid contained in the package, the minimum wet boiling point of the fluid, and a series of safety warnings. The safety warnings concern use and proper storage of the fluid and the safety consequences of using contaminated fluid. Comparable information requirements are set forth in S5.2.2.3 for packagers of hydraulic system mineral oil.

The safety warnings required on brake fluid and hydraulic system mineral oil containers warn against certain practices in using hydraulic fluid for braking systems that might result in the use of improper or contaminated fluids. The warnings also help to prevent improper storage of the brake fluid which could contaminate the fluid or cause it to absorb moisture. Avoiding the absorption of moisture is extremely important since moisture in a brake system degrades braking performance and safety by lowering the brake fluid's boiling point, increasing the fluid's viscosity at low atmospheric temperatures and increasing the risk of brake system component corrosion. Lower boiling points increase the risk of brake system failure and increase the possibilities of vapor lock. The safety warnings also alert users of brake fluid containers with capacities less than five gallons that the containers should not be refilled.

In April 1984, the agency issued an interpretation of Standard No. 116 which stated that the standard prohibits the use of labels, whether paper or of some other material, to meet the "marked on each . . . con-

tainer" requirements of S5.2.2.2 NHTSA interpreted S5.2.2.2 as requiring the relevant information to be marked *directly on* the brake fluid container and as not permitting the information to be placed on a label and affixed to the container. This interpretation was received with concern by some members of the brake fluid marketing industry who apparently were unaware that their use of permanently affixed labels on their products did not meet the requirements of S5.2.2.2. The industry's concern gave rise to the petitions for rulemaking from the CSMA and Arent requesting that NHTSA amend Standard No. 116 to permit the affixing of labels as an alternative to direct marking, to comply with the information requirements for brake fluid containers.

The two petitioners submitted virtually identical arguments in their rulemaking petitions. Arent, petitioning the agency on behalf of client companies engaged in the marketing of brake fluid products, believed that an amendment permitting the attachment of separate labels on containers would be "procompetitive, pro-consumer and achieve the intended purpose (label permanency) of NHTSA," without an adverse effect on safety. According to Arent, the requested amendment would result in consumer benefits by avoiding the costs associated with directly marking brake fluid containers. (The petitioners also raised various legal arguments regarding the use of labeling under the Vehicle Safety Act. The agency affirms its response to those arguments in the NPRM preceding this rule and will not further discuss them here. *See,* 52 FR at 10777.)

The CSMA believed that Standard No. 116 should permit brake fluid packagers to use permanently affixed labels because that would reduce costs with no negative effect on safety. According to CSMA, permitting the use of permanently affixed labels would permit a private brand name brake fluid packager to attach preprinted, low cost labels on readily available containers and avoid the expense of readjusting packaging lines each time a different brake fluid brand is packaged. CSMA stated that it is not economically feasible for independent packagers, typically small businesses, to directly mark the containers for each brand of brake fluid and store them in advance of packaging. It believed that the requirement for directly marking brake fluid containers entails the purchase of expensive machinery and increases other production costs, and "will serve only to eliminate from the marketplace those companies which contract-package brake fluid under private labels."

CSMA believed that the labeling requirements should refer neither to an "indelibly marked" requirement nor focus on the method of application of the required labeling. The petitioner suggested instead that the requirements address the performance of the label, i.e., its ability to adhere to the container during the life of the product and convey its information. The CSMA stated that the state-of-the-art printing and labeling technologies are such that adhesive labels can be made not to smear, run or become unattached from the container when exposed to brake fluid. In support of its argument to permit permanently affixed labels, the CSMA suggested a test method for determining the durability and indelibility of labels on brake fluid containers. That method included procedures for immersing a container in brake fluid and then determining whether an affixed label is destroyed or defaced when the attempt is made to remove it.

Since the agency tentatively concluded that an amendment permitting the use of *permanently* affixed labels would enhance manufacturer flexibility in the packaging of brake fluid while ensuring that safety needs are met, it issued an NPRM to amend Standard No. 116 to provide for the use of such labels on brake fluid containers. The NPRM went beyond the petition in making the same proposal for hydraulic system mineral oil containers, as NHTSA tentatively saw no reason not to allow packagers of hydraulic system mineral oil the same flexibility in packaging their product as proposed for brake fluid packagers. More specifically, the agency proposed to amend S5.2.2.2 and S5.2.2.3 of the standard to permit packagers of brake fluid and hydraulic system mineral oil the option of affixing a label to their containers which would be legible and incapable of being removed without its destruction after exposure to specified test conditions set forth in a new paragraph S6.14. The agency proposed that these new requirements for labeling indelibility and permanency apply to all containers of brake fluid and hydraulic system mineral oil containers, whether their information was marked directly on them or printed on an affixed label.

Comments on NPRM

The agency received six comments on its proposal. All but one of these commenters supported an amendment permitting the use of permanently affixed labels to satisfy the labeling requirements of Standard No. 116.

The Delco Moraine Division of General Motors (GM) supported each of the proposed amendments to the standard. The commenter believed the proposed amendment to S5.2.2.2 and S5.2.2.3 would, as the agency had stated in its proposal, "afford the manufacturers flexibility in the packaging of brake fluid and hydraulic system mineral oil while ensuring that safety needs are met." GM said that it manufactures, distributes and packages brake fluids and currently directly marks its containers as required by Standard No. 116. According to the commenter, GM has determined that the methods it uses for placing the required information on brake fluid containers will meet the performance requirements for legibility,

permanency and indelibility proposed in the NPRM. GM agreed with petitioner CSMA's statement regarding the feasibility of producing adhesive labels which would not smear, run or separate from the container when exposed to brake fluid.

Penray Company and Gold Eagle, two companies represented by petitioner Arent and engaged in the manufacture and packaging of motor vehicle brake fluid, supported the proposed amendments as promoting competition between packagers without negatively affecting safety. The CSMA also supported each of the proposed amendments to Standard No. 116, including those for hydraulic system mineral oil containers. In its comment, CSMA reiterated the point made earlier in its petition for rulemaking that current printing and labeling technologies are able to produce adhesive labels that are capable of remaining legible ad affixed to containers after exposure to brake fluid. CSMA also said packagers' efforts to meet the current requirements for directly marking their containers would unnecessarily increase consumer costs for brake fluid products by 26 to 32 cents per container.

American Motors Corporation (AMC) supported generally the agency's proposal permitting affixed labels to meet the marking requirements of Standard No. 116. The commenter said that labeling technology has progressed tremendously since the issuance of the current marking requirements and that there should be no technological impediments to creating "appropriate and durable labels." However, AMC emphasized that manufacturers should have the option of satisfying Standard No. 116's labeling requirements by either using permanently affixed labels or continuing current practices for directly marking containers. AMC questioned the need for and recommended NHTSA not adopt the legibility and permanency performance requirements proposed in the NPRM since other NHTSA regulations that call for permanently affixed labels (e.g., Part 567) have no such requirements.

As explained in the NPRM, the agency believes that the test procedures and performance criteria for container information are necessary to ensure that the safety warnings and other information required by Standard No. 116 will be present on brake fluid and hydraulic system mineral oil containers throughout the time the fluid container will be used. The NPRM explained the importance of the additional test requirements in the following manner:

> The agency has tentatively concluded that test procedures for label indelibility and durability, such as those suggested by [petitioner] CSMA, are needed to make labeling requirements more objective and to meet the need for motor vehicle safety. NHTSA is therefore proposing that labels meet the "destroyed or defaced" requirement after having been exposed to the test conditions of S6.14. * * * While both Part 567 and Standard No. 116 are intended to ensure that the required labeling remains in place and legible, there are several specific, identifiable problems, like brake fluid spills, against which the brake fluid labels should be protected. Thus, the agency believes that the general "destroyed or defaced" criterion in Part 567 is not sufficient for ensuring that the brake fluid label will be permanent. To ensure the permanency of brake fluid container labeling, additional criteria are appropriate in Standard No. 116 to address the specific hazards likely to interfere with the permanency of the labeling. The requirements must be directed at ensuring that the required labeling remains permanent notwithstanding contact with the elements and conditions of a garage-type environment. NHTSA believes it is appropriate to pattern test conditions for the labeling after real-world conditions likely to affect the adhesiveness and legibility of the labeling and set performance requirements ensuring that the information is present throughout the time the fluid will be used.
>
> (52 FR at 10778, 10779)

The agency continues to believe that the permanence and legibility of the labeling is of utmost importance to ensuring that consumers will be provided the information necessary for the proper storage and use of the brake fluids. Fluids that are improperly stored or used can adversely affect the proper operation of brake systems in motor vehicles. Moreover, commenters on the NPRM indicated that the performance criteria proposed by the agency can be met by current methods of container marking and labeling. The agency does not know of any reason for excluding the performance criteria from the standard that outweighs the safety benefits resulting from requirements ensuring the legibility and availability of the requisite safety information. Accordingly, the agency declines to adopt AMC's suggestion and includes the performance requirements in this final rule.

The Wagner Division of Cooper Industries (Wagner), a manufacturer and packager of DOT 3 brake fluid, objected to the agency's proposed amendment of Standard No. 116. Wagner's objections were based on three arguments, all of which were safety-related, with the third relating indirectly to equitable considerations.

Wagner believed that amending the standard as proposed would permit the use of "inferior labeling methods" that would adversely affect safety in two respects. First, Wagner believed the use of paper labels could result in increased brake system failures due to the use of mislabeled products. Second, Wag-

ner felt that Standard No. 116 should require the "same level of [label] permanency" as that required by Standard No. 105 [(49 CFR §571.105)] for the marking of hydraulic system brake fluid reservoirs. Standard No. 105 requires a warning statement on the reservoir that is "permanently affixed, engraved, or embossed." (S5.4.3) Wagner stated that it directly marks its brake fluid containers in accordance with the current requirements of Standard No. 116.

Wagner cautioned that one of the dangers involved with the misuse of brake fluids is that a brake system's elastomeric seals can develop excessive swelling when contaminated with non-DOT fluids, which could result in catastrophic brake system failure. The commenter indicated that a direct marking requirement is the only way to avoid the risk of possible consumer misuse of unidentified fluids found in containers whose labels have become detached. Wagner argued that since more motor vehicle brake fluid is sold for replacement purposes than is sold as original equipment, "It is incumbent on the National Highway Traffic Safety Administration to encourage every brake system repair person, professionals or private individuals, to use a safe product in rebuilding the brake system."

NHTSA concurs with Wagner's assertions that proper storage and use of brake fluid are very important to motor vehicle safety and that consumer awareness of the information provided on brake fluid containers significantly reduces the likelihood of brake system failure due to improper or contaminated fluids. However, the agency does not agree that a direct marking requirement is the only way of ensuring that the information on a brake fluid container will be present and legible to the consumer until its contents are used. The agency has determined that the test conditions proposed for container labeling—*viz.*, that the container is soaked in brake fluid or hydraulic system mineral oil for 15 minutes—are representative of the real-world conditions to which the container is likely to be exposed. A label that remains affixed and legible in the laboratory test will therefore remain legible and affixed to the container in satisfaction of the need to have the information conveyed by its markings available to the consumer until the container's contents are used.

As stated above, commenters have indicated that the performance criteria proposed by the agency can be met by current methods of container labeling. Given the technological advances made in the printing and labeling fields that now make it possible to affix a smear-resistant label that is capable of remaining attached to a container after exposure to conditions encountered in a garage-type environment, NHTSA believes it is appropriate to amend Standard No. 116 to permit the use of the new technology. In regard to Wagner's concern that the new labeling requirements will result in mislabeled products and an attendant reduction in safety, NHTSA does not agree that these amendments will increase the risk that packagers of brake fluid will inadvertently produce and market containers that misidentify their contents. Such misidentification can occur regardless of whether the identification is directly marked or on an affixed label. The agency believes current safeguards adopted by packagers preventing product misidentification will continue to ensure that brake fluid containers are properly identified.

In any event, the agency will carefully monitor compliance with the standard. If it becomes apparent that safety needs are not met by labeling practices, the agency will take appropriate action which may include further amendment to Standard No. 116.

Wagner argued that it is inconsistent for NHTSA to require " 'permanently affixed, engraved or embossed' labeling on vehicle brake fluid reservoirs and not demand the same level of permanency for the labeling on replacement brake fluid containers." The agency does not believe that the labeling requirements for the two standards are inconsistent. The requirements made final in this notice are intended to ensure the permanency of the information on brake fluid and hydraulic system mineral oil containers—i.e., that it remain present and legible until the container's contents are used. A packager may meet those requirements by affixing a permanent label on the container or by marking the container directly. In any case, the standard's requirement that the information be permanently and indelibly marked or labeled on the container is essentially the same as Standard No. 105's option for compliance by means of permanently affixing the required information.

Wagner's third objection to the proposed amendment involved equitable considerations. Wagner argued that an amendment that would compromise safety "for the convenience of companies not willing to invest in safety is an unfair and inconsistent action by NHTSA" to the detriment of brake fluid manufacturers who have invested resources to comply with Standard No. 116. Wagner expressed disappointment that the NPRM seemed to develop "a rationale intended to legitimize an inferior method of labeling."

The agency has carefully considered Wagner's concerns that this amendment to Standard No. 116 in effect penalizes parties who have complied with the standard by legitimizing an "inferior method of labeling." As NHTSA understands Wagner's equity argument, it is premised on that commenter's view that compliance by means of a permanently affixed label is inferior from the standpoint of vehicle safety to compliance by means of direct marking on the containers. The agency's response to Wagner's safety concerns has been discussed above and will not be repeated here. Because the agency has determined that safety will not be negatively affected by the proposed amendments to

Standard No. 116 and that the rule will provide packagers increased flexibility in labeling brake fluid and hydraulic system mineral oil containers, the amendments are hereby adopted by this final rule.

As described in the NPRM, the first step in the procedures for testing container information involves labels only. It requires that labels be cut vertically from top to bottom. Cutting the label is intended to preclude the use of various "slip-on" labels, which typically consist of a sleeve of paper or plastic which wraps around the container. They do not use any type of adhesive material to hold them in place on the container. NHTSA has determined that this type of labeling should be prohibited due to the ease with which it can be removed from the container and to the likelihood that containers will become completely unmarked before their fluid is used. Since no adhesive is used with these labels, the cutting of the label will allow the removal of the label, without defacing or destroying the label, even before the label is soaked with brake fluid or hydraulic system mineral oil. The use of that type of label would therefore constitute a noncompliance.

In its comment to the NPRM, Gold Eagle asked whether a paper or "poly" sleeve label that has been affixed to the container with adhesive will be deemed to comply with the new requirements of Standard No. 116 if it remains affixed to the container after the vertical cut has been made. Compliance of such a label could be determined only after it and its container have been soaked in the container's contents and then an attempt is made to remove the label.

During the next stage of determining compliance, the container of brake fluid or hydraulic system mineral oil (i.e., the test specimen) is soaked for 15 minutes at room temperature in the type of fluid found in the container. NHTSA believes that the 15 minute period is adequate to determine the effect of the fluid on the container markings. Because it is foreseeable that fluid labels moistened by excess fluid dripping down the container will be wiped by consumers, the next step in the compliance procedure is to wipe the labeling by hand with a clean dry cloth. A container would be determined to be in compliance if, after the wiping, the required markings are legible to an observer having corrected visual acuity of 20/40 (Snellen ratio) at a distance of one foot and, in the case of a container with an affixed label, the label cannot be removed without destroying or defacing it.

Effective date

No commenter objected to the proposal that compliance with the proposed amendments be required within 180 days after issuance of a final rule. Accordingly, the effective date of this final rule is December 27, 1988.

In consideration of the foregoing, 49 CFR Part 571.116, *Motor Vehicle Brake Fluids,* is amended to read as follows:

§571.116 [Amended]

2. S5.2.2.2 of §571.116 is amended to read as follows:

S5.2.2.2 Each packager of brake fluid shall furnish the information specified in paragraphs (a) through (g) of this section by clearly marking it on each brake fluid container or on a label (labels) permanently affixed to the container, in any location except a removable part such as a lid. After being subjected to the operations and conditions specified in S6.14, the information required by this section shall be legible to an observer having corrected visual acuity of 20/40 (Snellen ratio) at a distance of one foot, and any label affixed to the container in compliance with this section shall not be removable without its being destroyed or defaced.

* * * * *

3. S5.2.2.3 is amended to read as follows:

S5.2.2.3 Each packager of hydraulic system mineral oil shall furnish the information specified in paragraphs (a) through (e) of this section by clearly marking it on each brake fluid container or on a label (labels) permanently affixed to the container, in any location except a removable part such as a lid. After being subjected to the operations and conditions specified in S6.14, the information required by this section shall be legible to an observer having corrected visual acuity of 20/40 (Snellen ratio) at a distance of one foot, and any label affixed to the container in compliance with this section shall not be removable without its being destroyed or defaced.

* * * * *

4. A new S6.14 is added after the formula set forth in S6.13.6(d) and before S7, *Auxiliary test methods and reagent standards,* to read as follows:

S6.14 *Container information.* Each container with information marked directly on the container surface or on a label (labels) affixed to the container pursuant to S5.2.2.2 or S5.2.2.3 is subjected to the following procedure:

(a) If the container has a label affixed to it, make a single vertical cut all the way through the label with the container in the vertical position.

(b) Immerse the container in the same brake fluid or hydraulic system mineral oil contained therein for 15 minutes at room temperature (23±5°C; 73.4±9°F).

(c) Within 5 minutes after removing the container from the fluid or oil, remove excess liquid from the surface of the container by wiping with a clean dry cloth.

Issued on June 23, 1988

Diane K. Steed
Administrator

53 F.R. 24272
June 28, 1988

MOTOR VEHICLE SAFETY STANDARD NO. 116

Motor Vehicle Brake Fluids—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, Buses, and Motorcycles, and Brake Fluid and Brake Fluid Containers

(Docket No. 70-23; Notice 3)

S1. Scope. This standard specifies requirements for fluids for use in hydraulic brake systems of motor vehicles, containers for these fluids, and labeling of the containers.

S2. Purpose. The purpose of this standard is to reduce failures in the hydraulic braking systems of motor vehicles which may occur because of the manufacture or use of improper or contaminated fluid.

S3. Application. This standard applies to all fluid for use in hydraulic brake systems of motor vehicles. In addition, S5.3 applies to passenger cars, multipurpose passenger vehicles, trucks, buses, trailers, and motorcycles.

S4. Definitions.

"Blister" means a cavity or sac on the surface of a brake cup.

"Brake fluid" means a liquid designed for use in a motor vehicle hydraulic brake system in which it will contact elastomeric components made of styrene and butadiene rubber (SBR), ethylene and propylene rubber (EPR), polychloroprene (CR) brake hose inner tube stock or natural rubber (NR).

"Chipping" means a condition in which small pieces are missing from the outer surface of a brake cup.

"Hydraulic system mineral oil" means a mineral-oil-based fluid designed for use in motor vehicle hydraulic brake systems in which the fluid is not in contact with components made of SBR, EPR or NR.

"Duplicate samples" means 2 samples of brake fluid taken from a single packaged lot and tested simultaneously.

"Packager" means any person who fills containers with brake fluid that are subsequently distributed for retail sale.

"Packaged lot" is that quantity of brake fluid shipped by the manufacturer to the packager in a single container, or that quantity of brake fluid manufactured by a single plant run of 24 hours or less, through the same processing equipment and with no change in ingredients.

"Scuffing" means a visible erosion of a portion of the outer surface of a brake cup.

"Sloughing" means degradation of a brake cup as evidenced by the presence of carbon black loosely held on the brake cup surface, such that a visible black streak is produced when the cup, with a 500 ± 10 gram dead weight on it, is drawn base down over a sheet of white bond paper placed on a firm flat surface.

"Stickiness" means a condition on the surface of a brake cup such that fibers will be pulled from a wad of U.S.P. absorbent cotton when it is drawn across the surface.

S5. Requirements. This section specifies performance requirements for DOT 3, DOT 4 and DOT 5 brake fluids, requirements for brake fluid certification, and for container sealing, labeling and color coding for both brake fluids and hydraulic system mineral oils. Where a range of tolerances is specified, the brake fluid must be capable of meeting the requirements at all points within the range.

S5.1 Brake fluid. When tested in accordance with S6, brake fluids shall meet the following requirements.

S5.1.1 Equilibrium reflux boiling point (ERBP). When brake fluid is tested according to S6.1, the ERBP shall not be less than the following value for the grade indicated:

(a) DOT 3: 205°C (401°F)

(b) DOT 4: 230°C (446°F)

(c) DOT 5: 260°C (500°F)

S5.1.2 Wet ERBP. When brake fluid is tested according to S6.2, the wet ERBP shall not be less than the following value for the grade indicated:

(a) DOT 3: 140°C (284°F)

(b) DOT 4: 155°C (311°F)

(c) DOT 5: 180°C (356°F)

S5.1.3 Kinematic viscosities. When brake fluid is tested according to S6.3, the kinematic viscosities in centistokes (cSt) at stated temperatures shall be neither less than 1.5 cSt at 100° C. (212° F.) nor more than the following maximum value for the grade indicated:

(a) DOT 3: 1500 cSt at minus 40°C (minus 40° F)

(b) DOT 4: 1800 cSt at minus 40°C (minus 40° F)

(c) DOT 5: 900 cSt at minus 40°C (minus 40° F)

S5.1.4 pH value. When DOT 3 or DOT 4 brake fluid is tested according to S6.4, the pH value shall not be less than 7.0 or more than 11.5.

S5.1.5 Brake fluid stability.

S5.1.5.1 High-temperature stability. When brake fluid is tested according to S.6.5.3 the ERBP shall not change by more than 3.0°C (5.4°F) plus 0.05 degree for each degree that the ERBP of the fluid exceeds 225°C (437°F).

S5.1.5.2 Chemical stability. When DOT 3 or DOT 4 brake fluid is tested according to S6.5.4, the change in temperature of the refluxing fluid mixture shall not exceed 3.0°C (5.4°F) plus 0.05 degree for each degree that the ERBP of the fluid exceeds 225°C (437°F).

S5.1.6 Corrosion. When brake fluid is tested according to S.6.6—

(a) The metal test strips shall not show weight changes exceeding the limits stated in Table I.

TABLE 1

Test strip material	*Max. permissible weight change, mg/sq cm of surface*
Steel, Tinned Iron, Cast Iron	0.2
Aluminum	0.1
Brass, Copper	0.4

(b) Excluding the area of contact (13 ± 1 mm. ($\frac{1}{2} \pm \frac{1}{32}$ inch) measured from the bolt hole end of the test strip), the metal test strips shall not show pitting or etching to an extent discernible without magnification;

(c) The water-wet brake fluid at the end of the test shall show no jelling at 23 ± 5°C (73.4 ± 9°F);

(d) No crystalline deposit shall form and adhere to either the glass jar walls or the surface of the metal strips;

(e) At the end of the test, sedimentation of the water-wet brake fluid shall not exceed 0.10 percent by volume;

(f) The pH value of water-wet DOT 3 and DOT 4 brake fluid at the end of the test shall not be less than 7.0 nor more than 11.5;

(g) The cups at the end of the test shall show no disintegration, as evidenced by blisters or sloughing;

(h) The hardness of the cup shall not decrease by more than 15 International Rubber Hardness Degrees (IRHD); and

(i) The base diameter of the cups shall not increase by more than 1.4 mm. (0.055 inch).

S5.1.7 Fluidity and appearance at low temperature. When brake fluid is tested according to S6.7, at the storage temperature and for the storage times given in Table II—

(a) The fluid shall show no sludging, sedimentation, crystallization, or stratification;

(b) Upon inversion of the sample bottle, the time required for the air bubble to travel to the top of the fluid shall not exceed the bubble flow times shown in Table II; and

(c) On warming to room temperature, the fluid shall resume the appearance and fluidity that it had before chilling.

TABLE II—Fludity and Appearance at Low Temperatures

Storage temperature	*Storage time (hours)*	*Max. bubble flow time (seconds)*
minus 40±2°C (minus 40±3.6°F)	144±4.0	10
minus 50±2°C (minus 58±3.6°F)	6±0.2	35

S5.1.8 Evaporation. When brake fluid is tested according to S6.8—

(a) The loss by evaporation shall not exceed 80 percent by weight;

(b) The residue from the brake fluid after evaporation shall contain no precipitate that remains gritty or abrasive when rubbed with the fingertip; and

(c) The residue shall have a pour point below minus 5°C (+23°F).

S5.1.9 Water tolerance.

(a) *At low temperature.* When brake fluid is tested according to [S6.9.3(a)—]

(1) The fluid shall show no sludging, sedimentation, crystallization, or stratification;

(2) Upon inversion of the centrifuge tube, the air bubble shall travel to the top of the fluid in not more than 10 seconds;

(3) If cloudiness has developed, the wet fluid shall regain its original clarity and fluidity when warmed to room temperature; and

(b) *At 60° C. (140° F.).* When brake fluid is tested according to [S6.9.3(b)—]

(1) The fluid shall show no stratification; and

(2) Sedimentation shall not exceed 0.15 percent by volume after centrifuging.

S5.1.10 Compatibility.

(a) *At low temperature.* When brake fluid is tested according to S6.10.3(a) the test specimen shall show no sludging, sedimentation, or crystallization. In addition DOT 3 and DOT 4 fluids shall show no stratification.

(b) *At 60° C. (140° F.).* When brake fluid is tested according to S6.10.3(b)—

(1) Sedimentation shall not exceed 0.05 percent by volume after centrifuging; and

(2) DOT 3 and DOT 4 fluids shall show no stratification.

S5.1.11 Resistance to oxidation. When brake fluid is tested according to S6.11—

(a) The metal test strips outside the areas in contact with the tinfoil shall not show pitting or etching to an extent discernible without magnification;

(b) No more than a trace of gum shall be deposited on the test strips outside the areas in contact with the tinfoil;

(c) The aluminum strips shall not change in weight by more than 0.05 mg/sq cm; and

(d) The cast iron strips shall not change in weight by more than 0.3 mg/sq cm.

S5.1.12 Effects on cups. When brake cups are subjected to brake fluid in accordance with [S6.12]—

(a) The increase in the diameter of the base of the cups shall be not less than 0.15 mm (0.006 inch) or more than 1.40 mm (0.055 inch);

(b) The decrease in hardness of the cups shall be not more than 10 IRHD at 70°C (158°F) or more than 15 IRHD at 120°C (248°F), and there shall be no increase in hardness of the cups; and

(c) The cups shall show no disintegration as evidenced by stickiness, blisters, or sloughing.

S5.1.13 Stroking properties. When brake fluid is tested according to S6.13—

(a) Metal parts of the test system shall show no pitting or etching to an extent discernible without magnification;

(b) The change in diameter of any cylinder or piston shall not exceed 0.13 mm (0.005 inch);

(c) The average decrease in hardness of seven of the eight cups tested (six wheel cylinder and one master cylinder primary) shall not exceed 15 IRHD. Not more than one of the seven cups shall have a decrease in hardness greater than 17 IRHD;

(d) None of the eight cups shall be in an unsatisfactory operating condition as evidenced by stickiness, scuffing, blisters, cracking, chipping, or other change in shape from its original appearance;

(e) None of the eight cups shall show an increase in base diameter greater than 0.90 mm (0.035 inch);

(f) The average lip diameter set of the eight cups shall not be greater than 65 percent; **(51 F.R. 16699—May 6, 1986. Effective: May 6, 1986)]**

(g) During any period of 24,000 strokes, the volume loss of fluid shall not exceed 36 milliliters;

(h) The cylinder pistons shall not freeze or function improperly throughout the test;

(i) The total loss of fluid during the 100 strokes at the end of the test shall not exceed 36 milliliters;

(j) The fluid at the end of the test shall show no formation of gels;

(k) At the end of the test the amount of sediment shall not exceed 1.5 percent by volume; and

(l) Brake cylinders shall be free of deposits that are abrasive or that cannot be removed when rubbed moderately with a nonabrasive cloth wetted with ethanol.

S5.1.14 Fluid color. Brake fluid and hydraulic system mineral oil manufactured on or after September 1, 1978, shall be of the color indicated:

DOT 3 and DOT 4—colorless to amber.
DOT 5—purple.
Hydraulic system mineral oil—green.

S5.2 Packaging and labeling requirements for motor vehicle brake fluids.

S5.2.1 Container sealing. Each brake fluid or hydraulic system mineral oil container with a capacity of 6 fluid ounces or more shall be provided with a resealable closure that has an inner seal impervious to the packaged brake fluid. The container closure shall include a tamper-proof feature that will either be destroyed or substantially altered when the container closure is initially opened.

S5.2.2 Certification, marking, and labeling.

S5.2.2.1 Each manufacturer of a DOT grade brake fluid shall furnish to each packager, distributor, or dealer to whom he delivers brake fluid, the following information:

(a) A serial number identifying the production lot and the date of manufacture of the brake fluid.

(b) The grade (DOT 3, DOT 4, or DOT 5) of the brake fluid.

(c) The minimum wet boiling point in Fahrenheit of the brake fluid.

(d) Certification that the brake fluid conforms to Federal Motor Vehicle Safety Standard No. 116.

S5.2.2.2 [Each packager of a brake fluid shall furnish the information specified in paragraphs (a) through (g) of this section by clearly marking it on each brake fluid container or on a label (labels) permanently affixed to the container, in any location except a removable part such as a lid. After being subjected to the operations and conditions specified in S6.14, the information required by this section shall be legible to an observer having corrected visual acuity of 20/40 (Snellen ratio) at a distance of one foot, and any label affixed to the container in compliance with this section shall not be removable without its being distroyed or defaced.] **(53 F.R. 24272—June 28, 1988. Effective: December 27, 1988)**

S5.2.2.3 [Each packager of hydraulic system mineral oil shall furnish the information specified in paragraphs (a) through (e) of this section by clearly marking it on each brake fluid container or on a label (labels) permanently affixed to the container, in any location except a removable part such as a lid. After being subjected to the operations and conditions specified in S6.14, the information required by this section shall be legible to an observer having corrected visual acuity of 20/40 (Snellen ratio) at a distance of one foot, and any label affixed to the container in compliance with this section shall not be removable without its being distroyed or defaced.] **(53 F.R. 24272—June 28, 1988. Effective: December 27, 1988)**

S5.2.2.4 If a container for brake fluid or hydraulic system mineral oil is not normally visible but designed to be protected by an outer container or carton during use, the outer container or carton rather than the inner container shall meet the labeling requirements of S5.2.2.2 or S5.2.2.3, as appropriate.

S5.3 Motor vehicle requirement. Each passenger car, multipurpose passenger vehicle, truck, bus, trailer, and motorcycle that has a hydraulic brake system shall be equipped with fluid that has been manufactured and packaged in conformity with the requirements of this standard.

S6. Test procedures. [Until November 3, 1986, SAE RM-1 Compatibility Fluid, as described in Appendix A of SAE Standard J1703b, *Motor Vehicle Brake Fluid,* July 1970, may be used in place of TEGME and SAE RM-66-03 in the humidification (S6.2), chemical stability (S6.5.4), and compatibility (S6.10) test procedures, and as a referee material in S7.2. **(51 F.R. 16699—May 6, 1986. Effective: May 6, 1986)**]

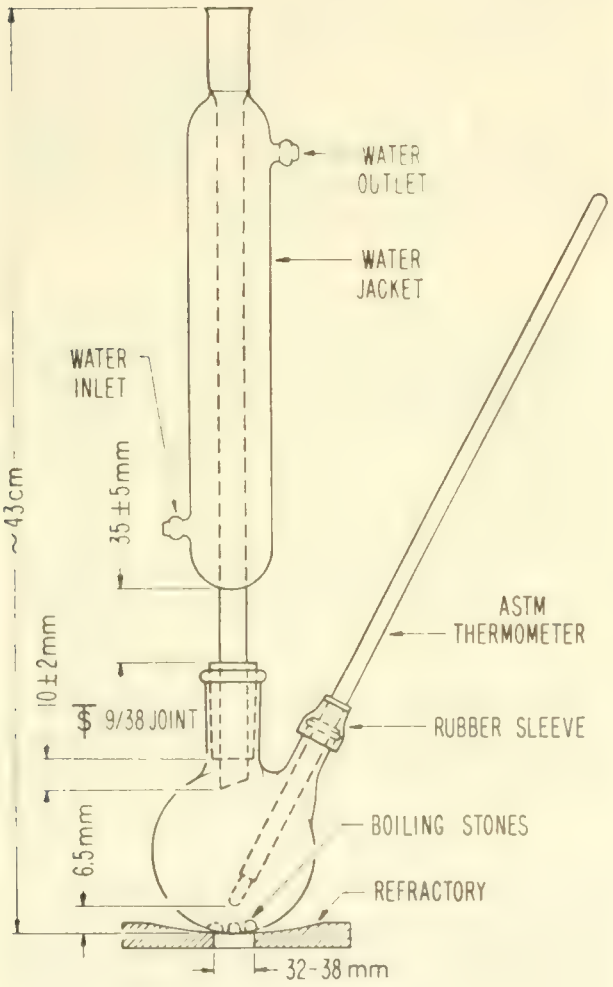


FIG. 1
BOILING POINT TEST APPARATUS

S6.1 Equilibrium reflux boiling point. Determine the ERBP of a brake fluid by running duplicate samples according to the following procedure and averaging the results.

S6.1.1 Summary of procedure. Sixty milliliters (ml) of brake fluid are boiled under specified equilibrium conditions (reflux) at atmospheric pressure in a 100-ml flask. The average temperature of the boiling fluid at the end of the reflux period, corrected for variations in barometric pressure if necessary, is the ERBP.

S6.1.2 Apparatus. (See Figure 1) The test apparatus shall consist of—

(a) *Flask.* (See Figure 2) A 100-ml roundbottom, short-neck heat-resistant glass flask having a neck with a 19/38 standard taper, female ground-glass joint and a side-entering tube, with an outside diameter of 10 millimeters (mm), which centers the thermometer bulb in the flask 6.5 mm from the bottom;

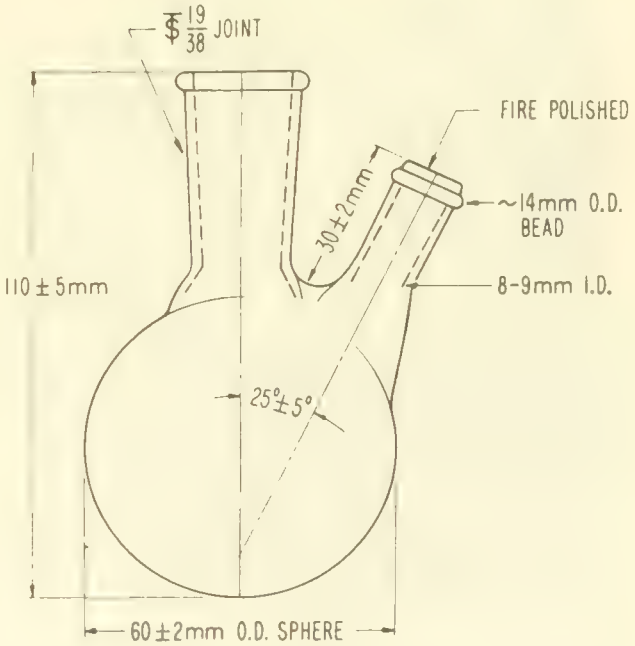


FIG. 2
DETAIL OF 100ml SHORT-NECK FLASK

(b) *Condenser.* A water-cooled, reflux, glass-tube-type condenser having a jacket 200 mm in length, the bottom end of which has a 19/38 standard-taper, drip-tip, male ground-glass joint;

(c) *Boiling stones.* Three clean, unused silicon carbide grains (approximately 2 mm (0.08 inch) in diameter, grit No. 8);

(d) *Thermometer.* Standardized calibrated partial immersion (76 mm), solid stem, thermometers conforming to the requirements for an ASTM 2C or 2F, and an ASTM 3C or 3F thermometer; and

(e) *Heat source.* Variable autotransformer-controlled heating mantle designed to fit the flask, or an electric heater with rheostat heat control.

S6.1.3 Preparation of apparatus.

(a) Thoroughly clean and dry all glassware.

(b) Insert thermometer through the side tube until the tip of the bulb is 6.5 mm (¼ inch) from the bottom center of the flask. Seal with a short piece of natural rubber, EPDM, SBR or butyl tubing.

(c) Place 60±1 ml of brake fluid and the silicon carbide grains into the flask.

(d) Attach the flask to the condenser. When using a heating mantle, place the mantle under the flask and support it with a ring-clamp and laboratory-type stand, holding the entire assembly in place by a clamp. When using a rheostat-controlled heater, center a standard porcelain or hard asbestos refractory, having a diameter opening 32 to 38 mm, over the heating element and mount the flask so that direct heat is applied only through the opening in the refractory. Place the assembly in an area free from drafts or other types of sudden temperature changes. Connect the cooling water inlet and outlet tubes to the condenser. Turn on the cooling water. The water supply temperature shall not exceed 28°C (82.4°F) and the temperature rise through the condenser shall not exceed 2°C (3.6°F).

S6.1.4 Procedure for preparation of apparatus. Apply heat to the flask so that within 10±2 minutes the fluid is refluxing in excess of 1 drop per second. The reflux rate shall not exceed 5 drops per second at any time. Immediately adjust the heating rate to obtain an equilibrium reflux rate of 1 to 2 drops per second over the next 5±2 minutes. Maintain this rate for an additional 2 minutes, taking four temperature readings at 30-second intervals. Record the average of these as the observed ERBP. If no reflux is evident when the fluid temperature reaches 260°C (500°F), discontinue heating and report ERBP as in excess of 260°C (500°F).

S6.1.5 Calculation.

(a) *Thermometer inaccuracy.* Correct the observed ERBP by applying any correction factor obtained in standardizing the thermometer.

(b) *Variation from standard barometric pressure.* Apply the factor shown in Table III to calculate the barometric pressure correction to the ERBP.

(c) If the two corrected observed ERBP's agree within 2.0°C (4.0°C for brake fluids having an ERBP over 230°C/446°F) average the duplicate runs as the ERBP; otherwise, repeat the entire test, averaging the four corrected observed values to determine the original ERBP.

TABLE III.—Correction for Barometric Pressure

Observed ERBP corrected for thermometer inaccuracy	*Correction per 2 mm difference in pressure*[a]	
	°C.	*(°F.)*
100°C (212°F) to 190°C (374°F)	0.039	(0.07)
Over 190°C (374°F)	0.04	(0.08)

[a] To be added in case barometric pressure is below 760 mm; to be subtracted in case barometric pressure is above 760 mm.

S6.2 Wet ERBP. Determine the wet ERBP of a brake fluid by running duplicate samples according to the following procedure.

[S6.2.1 Summary of the procedure.

(a) *With TEGME:* Except as provided in paragraph S6.2.1(b), a 150 ml sample of the brake fluid is humidified under controlled conditions; 150 ml of SAE triethylene glycol monoethyl ether, brake fluid grade, referee material (TEGME) as described in Appendix E of SAE Standard J1703, November 1983, *Motor Vehicle Brake Fluid,*

November 1983, is used to establish the end point for humidification. After humidification the water content and ERBP of the brake fluid are determined.

(b) *With RM-1:* Until November 3, 1986, SAE RM-1 *Compatibility Fluid,* as described in Appendix A of SAE Standard J1703b, *Motor Vehicle Brake Fluid,* July 1970, may be used with the following procedures. See S6. A 100-ml sample of the brake fluid is humidified under controlled conditions: 100 ml of SAE RM-1 *Compatibility Fluid* is used to establish the end point for humidification. After humidification the water content and ERBP of the brake fluid are determined.

S6.2.2 Apparatus for humidification. (See Figure 3.) Until November 3, 1986, a manufacturer may use either TEGME or RM-1 *Compatibility Fluid.* If TEGME is used, substitute 450 ml of distilled water in place of the salt slurry and disregard the "45 ± 7mm" dimension. **(51 F.R. 16699—May 6, 1986. Effective: May 6, 1986)]**

Test apparatus shall consist of—

(a) *Glass jars.* Four SAE RM-49 corrosion test jars or equivalent screw-top, straight-sided, round glass jars each having a capacity of about 475 ml and approximate inner dimensions of 100 mm in height by 75 mm in diameter, with matching lids having new, clean inserts providing water-vapor-proof seals;

(b) *Desiccator and cover.* Four bowl-form glass desiccators, 250 mm inside diameter, having matching tubulated covers fitted with No. 8 rubber stoppers; and

(c) *Desciator plact.* Four 230-mm diameter, perforated porcelain desiccator plates, without feet, glazed on one side.

S6.2.3 Reagents and Materials.

[(a) Distilled water, see S7.1.

(b) Except as provided in S6.2.3(c), SAE TEGME referee material.

(c) Until November 3, 1986, a manufacturer may use either TEGME or SAE RM-1 *Compatibility Fluid.* See S6.

(d) If RM-1 is used, also use ammonium sulfate $(NH_4)_2SO_4$. Reagent or A.C.S. grade.

S6.2.4 Preparation of Apparatus.

(a) *With TEGME:* Except as provided in S6.2.4(b), lubricate the ground-glass joint of the desiccator. Pour 450 ± 10 ml of distilled water into each desiccator and insert perforated porcelain desiccator plates. Place the desiccators in an oven with temperature controlled at 50 ± 1°C (122 ± 1.8°F) throughout the humidification procedure.

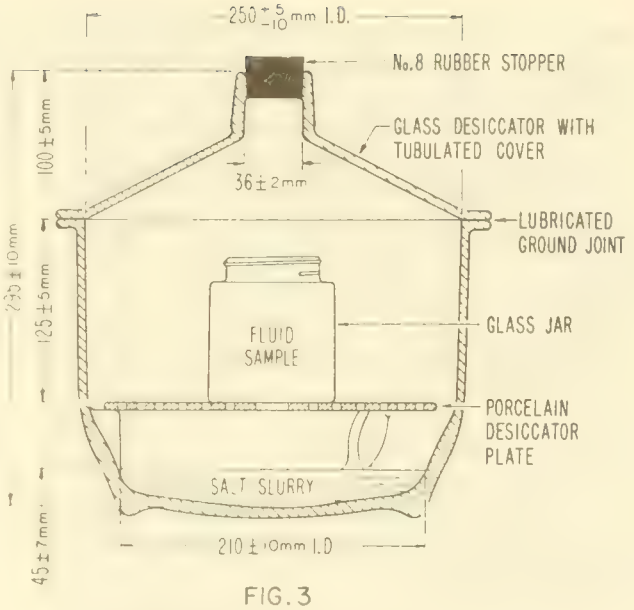


FIG. 3
HUMIDIFICATION APPARATUS

(b) *With RM-1:* Until November 3, 1986, a manufacturer may use either TEGME or SAE RM-1 *Compatibility Fluid.* See S6. Lubricate the ground-glass joint of the desiccator. Load each desiccator with 450 ± 25 grams of the ammonium sulfate and add 125 ± 10 ml of distilled water. The surface of the salt slurry shall lie within 45 ± 7 mm of the top surface of the desiccator plate. Place the desiccators in an area with temperature controlled at 23 ± 2°C (73.4 ± 3.6°F) throughout the humidification procedure. Condition the loaded desiccator with the covers on and stoppers in place at least 12 hours before use. Use a fresh charge of salt slurry for each test.

S6.2.5 Procedure.

(a) *With TEGME:* Except as provided by S6.2.5(b), pour 150 ± 5 ml of the brake fluid into an open corrosion test jar. Place the jar into a desiccator. Prepare in the same manner a duplicate test fluid sample and two duplicate specimens of the SAE TEGME referee material (150 ± 5 ml of TEGME in each jar). The water content of the SAE TEGME fluid is adjusted to 0.50 ± 0.05 percent by weight at the start of the test in accordance with S7.2. Place these samples in the dessicators in the 50°C (122°F) controlled oven and replace desiccator covers. At intervals, during oven humidification, remove the rubber stopper in the top of each desiccator containing SAE TEGME fluid. Using a long-needled hypodermic syringe, take a sample of not more than 2 ml from each jar and determine its

water content. Remove no more than 10 ml of fluid from each SAE TEGME sample during the humidification procedure. When the water content of the SAE fluid reaches 3.70±0.05 percent by weight (average of the duplicates), remove the two test fluid specimens from their desiccators and promptly cap each jar tightly. Allow the sealed jars to cool for 60–90 minutes at 23±5°C (73.4±9°F). Measure the water contents of the test fluid specimens in accordance with S7.2 and determine their ERBP's in accordance with S6.1. If the two ERBP's agree within 4°C (8°F), average them to determine the wet ERBP; otherwise repeat and average the four individual ERBP's as the wet ERBP of the brake fluid.

(b) *With RM-1:* Until November 3, 1986, a manufacturer may use either TEGME or SAE RM-1 *Compatibility Fluid.* See S6. Pour 100±1 ml of the brake fluid into a corrosion test jar. Promptly place the jar into a desiccator. Prepare duplicate test sample, and two duplicate specimens of the SAE RM-1 *Compatibility Fluid.* Adjust water content of the SAE RM-1 fluid to 0.50±0.05 percent by weight at the start of the test in accordance with S7.2. At intervals remove the rubber stopper in the top of each desiccator containing SAE RM-1 fluid. Using a long-needled hypodermic syringe, take a sample of not more than 2 ml from each jar and determine its water content. Remove no more than 10 ml of fluid from each SAE RM-1 sample during the humidification procedure. When the water content of the RM-1 fluid reaches 3.50±0.05 percent by weight (average of the duplicates), remove the two test fluid specimens from their desiccators and promptly cap each jar tightly. Measure the water contents of the test fluid specimens in accordance with S7.2 and determine their ERBP's in accordance with S6.1 through S6.1.5. If the two ERPB's agree within 4°C. (8°F.), average them to determine the wet ERBP; otherwise repeat and average the four individual ERBP's as the wet ERBP of the brake fluid.) **(51 F.R. 16699—May 6, 1986. Effective: May 6, 1986)]**

S6.3 Kinematic viscosity. Determine the kinematic viscosity of a brake fluid in centistokes (cSt) by the following procedure. Run duplicate samples at each of the specified temperatures, making two timed runs on each sample.

S6.3.1 Summary of the procedure. The time is measured for a fixed volume of the brake fluid to flow through a calibrated glass capillary viscometer under an accurately reproducible head and at a closely controlled temperature. The kinematic viscosity is then calculated from the measured flow time and the calibration constant of the viscometer.

S6.3.2 Apparatus.

(a) *Viscometers.* Calibrated glass capillary-type viscometers, ASTM D2515–66, *Standard Specification for Kinematic Glass Viscometers,* measuring viscosity within the precision limits of S6.4.7. Use suspended level viscometers for viscosity measurements at low temperatures. Use Cannon-Fenske Routine or other modified Ostwald viscometers at ambient temperatures and above.

(b) *Viscometer holders and frames.* Mount a viscometer in the constant-temperature bath so that the mounting tube is held within 1 degree of the vertical.

(c) *Viscometer bath.* A transparent liquid bath of sufficient depth such that at no time during the measurement will any portion of the sample in the viscometer be less than 2 cm below the surface or less than 2 cm above the bottom. The bath shall be cylindrical in shape, with turbulent agitation sufficient to meet the temperature control requirements. For measurements within 15 to 100° C. (60 to 212°F) the temperature of the bath medium shall not vary by more than 0.01°C (0.02°F) over the length of the viscometers, or between the positions of the viscometers, or at the locations of the thermometers. Outside this range, the variation shall not exceed 0.03°C (0.05°F).

(d) *Thermometers.* Liquid-in-glass Kinematic Viscosity Test Thermometers, covering the range of test temperatures indicated in Table IV and conforming to ASTM E1–68, *Specifications for ASTM Thermometers,* and in the IP requirements for IP Standard Thermometers. Standardize before use (see S6.3.3(b)). Use two standardized thermometers in the bath.

(e) *Timing device.* Stop watch or other timing device graduated in divisions representing not more than 0.2 second, with an accuracy of at least ±0.05 percent when tested over intervals of 15 minutes. Electrical timing devices may be used when the current frequency is controlled to an accuracy of 0.01 percent or better.

S6.3.3 Standardization.

(a) *Viscometers.* Use viscometers calibrated in accordance with Appendix 1 of ASTM D445–65, *Viscosity of Transparent and Opaque Liquids*

TABLE IV
Kinematic Viscosity Thermometers

Temperature range		*For tests at*		*Subdivisions*		*Thermometer number*	
deg C.	deg F.	deg C.	deg F.	deg C.	deg F.	ASTM	IP
minus 55.3 to minus 52.5	minus 67.5 to minus 62.5	minus 55	minus 67	0.05	0.1	74 F.	69 F. or C.
minus 41.4 to minus 38.6	minus 42.5 to minus 37.5	minus 40	minus 40	0.05	0.1	73 F.	68 F. or C.
98.6 to 101.4	207.5 to 212.5	100	212	0.05	0.1	30 F.	32 F. or C.

(Kinematic and Dynamic Viscosities.) The calibration constant, C, is dependent upon the gravitational acceleration at the place of calibration. This must, therefore, be supplied by the standardization laboratory together with the instrument constant. Where the acceleration of gravity, g, in the two locations differs by more than 0.1 percent, correct the calibration constant as follows:

$$C_2 = \frac{g_2}{g_1} \times C_1$$

where the subscripts 1 and 2 indicate respectively the standardization laboratory and the testing laboratory.

(b) *Thermometers.* Check liquid-in-glass thermometers to the nearest 0.01°C (0.02°F) by direct comparison with a standardized thermometer. Kinematic Viscosity Test Thermometers shall be standardized at "total immersion." The ice point of standardized thermometers shall be determined before use and the official corrections shall be adjusted to conform to the changes in ice points. (See ASTM E77–66, *Verification and Calibration of Liquid-in-Glass Thermometers.*)

(c) *Timers.* Time signals are broadcast by the National Bureau of Standards, Station WWV, Washington, D.C., at 2.5, 5, 10, 15, 20, 25, 30 and 35 Mc/sec (MH_z). Time signals are also broadcast by Station CHU from Ottawa, Canada, at 3.330, 7.335 and 14.670 Mc/sec, and Station MSF at Rugby, United Kingdom, at 2.5, 5 and 10 Mc/sec.

S6.3.4 Procedure.

(a) Set and maintain the bath at the appropriate test temperature (see S5.1.3) within the limits specified in S6.3.2(c). (Apply the necessary corrections, if any, to all thermometer readings.

(b) Select a clean, dry, calibrated viscometer giving a flow time not less than its specified minimum, or 200 seconds, whichever is the greater.

(c) Charge the viscometer in the manner used when the instrument was calibrated. Do not filter or dry the brake fluid, but protect it from contamination by dirt and moisture during filling and measurements.

(1) Charge the suspended level viscometers by tilting about 30 degrees from the vertical and pouring sufficient brake fluid through the fill tube into the lower reservoir so that when the viscometer is returned to vertical position the meniscus is between the fill marks. For measurements below 0°C (32°F), before placing the filled viscometer into the constant temperature bath, draw the sample into the working capillary and timing bulb and insert small rubber stoppers to suspend the fluid in this position, to prevent accumulation of water condensate on the walls of the critical portions of the viscometer. Alternatively, fit loosely packed drying tubes onto the open ends of the viscometer to prevent water condensation, but do not restrict the flow of the sample under test by the pressures created in the instrument.

(2) If a Cannon-Fenske Routine viscometer is used, charge by inverting and immersing the smaller arm into the brake fluid and applying vacuum to the larger arm. Fill the tube to the upper timing mark, and return the viscometer to an upright position.

(d) Mount the viscometer in the bath in a true vertical position (See S6.3.2(b)).

(e) The viscometer shall remain in the bath until it reaches the test temperature.

(f) At temperature below 0°C (32°F) conduct an untimed preliminary run by allowing the brake fluid to drain through the capillary into the lower reservoir after the test temperature has been established.

(g) Adjust the head level of the brake fluid to a position in the capillary arm about 5 mm above the first timing mark.

(h) With brake fluid flowing freely measure to within 0.2 second the time required for the meniscus to pass from the first timing mark to the second. If this flow time is less than the minimum specified for the viscometer, or 200 seconds, whichever is greater, repeat using a viscometer with a capillary of smaller diameter.

(i) Repeat S6.3.4(g) and (h). If the two timed runs do not agree within 0.2 percent, reject and repeat using a fresh sample of brake fluid.

S6.3.5 Cleaning of viscometers.

(a) Periodically clean the instrument with chromic acid to remove organic deposits. Rinse thoroughly with distilled water and acetone, and dry with clean dry air.

(b) Between successive samples rinse the viscometer with ethanol (isopropanol when testing DOT 5 fluids) followed by an acetone or ether rinse. Pass a slow stream of filtered dry air through the viscometer until the last trace of solvent is removed.

S6.3.6 Calculation.

(a) The following viscometers have a fixed volume charged at ambient temperature, and as a consequence C varies with test temperature: Cannon-Fenske Routine, Pinkevitch, Cannon Manning Semi-Micro, and Cannon Fenske Opaque. To calculate C at test temperatures other than the calibration temperature for these viscometers, see ASTM D2515–66, *Kinematic Glass Viscometers,* or follow instructions given on the manufacturer's certificate of calibration.

(b) Average the four timed runs on the duplicate samples to determine the kinematic viscosities.

S6.3.7 Precision (at 95 percent confidence level).

(a) *Repeatability.* If results on duplicate samples by the same operator differ by more than 1.0 percent of their mean, repeat the tests.

S6.4 pH value. Determine the pH value of a brake fluid by running one sample according to the following procedure.

S6.4.1 Summary of the procedure. Brake fluid is diluted with an equal volume of an ethanolwater solution. The pH of the resultant mixture is measured with a prescribed pH meter assembly at 23°C (73.4°F).

S6.4.2 Apparatus. The pH assembly consists of the pH meter, glass electrode, and calomel electrode, as specified in Appendices A1.1, A1.2 and A1.3 of ASTM D1121–67, *Standard Method of Test for Reserve Alkalinity of Engine Antifreezes and Antirusts.* The glass electrode is a full range type (pH 0–14), with low sodium error.

S6.4.3 Reagents. Reagent grade chemicals conforming to the specifications of the Committee on Analytical Reagents of the American Chemical Society.

(a) *Distilled water.* Distilled water (S7.1) shall be boiled for about 15 minutes to remove carbon dioxide, and protected with a soda-lime tube or its equivalent while cooling and in storage. (Take precautions to prevent contamination by the materials used for protection against carbon dioxide.) The pH of the boiled distilled water shall be between 6.2 and 7.2 at 25°C (77°F).

(b) *Standard buffer soutions.* Prepare buffer solutions for calibrating the pH meter and electrode pair from salts sold specifically for use, either singly or in combination, as pH standards. Dry salts for 1 hour at 110°C (230°F) before use except for borax which shall be used as the decahydrate. Store solutions with pH less than 9.5 in bottles of chemically resistant glass or polyethylene. Store the alkaline phosphate solution in a glass bottle coated inside with paraffin. Do not use a standard with an age exceeding three months.

(1) Potassium hydrogen phthalate buffer solution (0.05 M, pH = 4.01 at 25°C (77°F)). Dissolve 10.21g of potassium hydrogen phthalate ($KHC_8H_4O_4$) in distilled water. Dilute to 1 liter.

(2) Neutral phosphate buffer solution (0.025 M with respect to each phosphate salt, pH = 6.86 at 25°C (77°F)). Dissolve 3.40g of potassium dihydrogen phosphate (KH_2PO_4) and 3.55g of anhydrous disodium hydrogen phosphate (NA_2HPO_4) in distilled water.

(3) Borax buffer solution (0.01 M, pH = 9.18 at 25°C (77°F)). Dissolve 3.81g of disodium tetraborate decahydrate ($Na_2B_40_7$ 10 H_2O) in distilled water, and dilute to 1 liter. Stopper the bottle except when actually in use.

(4) Alkaline phosphate buffer solution (0.01 M trisodium phosphate, pH = 11.72 at 25°C

(77°F)). Dissolve 1.42g of anhydrous disodium hydrogen phosphate (Na_2HPO_4) in 100 ml of a 0.1 M carbonate-free solution of sodium hydroxide. Dilute to 1 liter with distilled water.

(5) Potassium chloride electrolyte. Prepare a saturated solution of potassium chloride (KCl) in distilled water.

(c) *Ethanol-water mixture.* To 80 parts by volume of ethanol (S7.3) add 20 parts by volume of distilled water. Adjust the pH of the mixture to 7.0±0.1 using 0.1 N sodium hydroxide (NaOH) solution. If more than 4.0 ml of NaOH solution per liter of mixture is required for neutralization, discard the mixture.

S6.4.4 Preparation of electrode system.

(a) *Maintenance of electrodes.* Clean the glass electrode before using by immersing in cold chromic-acid cleaning solution. Drain the calomel electrode and fill with KCl electrolyte, keeping level above that of the mixture at all times. When not in use, immerse the lower halves of the electrodes in distilled water, and do not immerse in the mixture for any appreciable period of time between determinations.

(b) *Preparation of electrodes.* Condition new glass electrodes and those that have been stored dry as recommended by the manufacturer. Before and after using, wipe the glass electrode thoroughly with a clean cloth, or a soft absorbent tissue, and rinse with distilled water. Before each pH determination, soak the prepared electrode in distilled water for at least 2 minutes. Immediately before use, remove any excess water from the tips of the electrode.

S6.4.5 Standardization of the pH assembly and testing of the electrodes.

(a) Immediately before use, standardize the pH assembly with a standard buffer solution. Then use a second standard buffer solution to check the linearity of the response of the electrodes at different pH values, and to detect a faulty glass electrode or incorrect temperature compensation. The two buffer solutions bracket the anticipated pH value of the test brake fluid.

(b) Allow instrument to warm up, and adjust according to the manufacturer's instructions. Immerse the tips of the electrodes in a standard buffer solution and allow the temperature of the buffer solution and the electrodes to equalize. Set the temperature knob at the temperature of the buffer solution. Adjust the standardization or asymmetry potential control until the meter registers a scale reading, in pH units, equal to the known pH of the standardizing buffer solution.

(c) Rinse the electrodes with distilled water and remove excess water from the tips. Immerse the electrodes in a second standard buffer solution. The reading of the meter shall agree with the known pH of the second standard buffer solution within ±0.05 unit without changing the setting of the standardization of asymmetry potential control.

(d) A faulty electrode is indicated by failure to obtain a correct value for the pH of the second standard buffer solution after the meter has been standardized with the first.

S6.4.6 Procedure. To 50±1 ml of the test brake fluid add 50±1 ml of the ethanol-water (S6.4.3(c)) and mix thoroughly. Immerse the electrodes in the mixture. Allow the system to come to equilibrium, readjust the temperature compensation if necessary, and take the pH reading.

S6.5 Fluid stability. Evaluate the heat and chemical stability of a brake fluid by the following procedure, running duplicate samples for each test and averaging the results.

S6.5.1 Summary of the procedure. The degradation of the brake fluid at elevated temperature, alone or in a mixture with a reference fluid, is evaluated by determining the change in boiling point after a period of heating under reflux conditions.

S6.5.2 Apparatus. Use the apparatus and preparation specified in S6.1.2 and S6.1.3.

S6.5.3 High temperature stability.

S6.5.3.1 Procedure.

(a) Heat a new 60±1 ml sample of the brake fluid to 185±2°C (365±3.6°F). Hold at this temperature for 120±5 minutes. Bring to a reflux rate in excess of 1 drop per second within 5 minutes. The reflux rate should not exceed 5 drops per second at any time. Over the next 5±2 minutes adjust the heating rate to obtain an equilibrium reflux rate of 1 to 2 drops per second. Maintain this rate for an additional 2 minutes, taking 4 temperature readings at 30-second intervals. Average these as the observed ERBP. If no reflux is evident when the fluid temperature reaches 260° C (500°F), discontinue heating and report ERBP as in excess of 260°C (500°F).

S6.5.3.2 Calculation. Correct the observed ERBP for thermometer and barometric pressure factors according to S6.1.5(a) and (b). Average the corrected ERBP's of the duplicate samples. The difference between this average and the original ERBP obtained in S6.1 is the change in ERBP of the fluid.

S6.5.4 Chemical stability.

[S6.5.4.1 Materials.

(a) Except as provided in S6.5.4.1(b), SAE RM-66-03 *Compatibility Fluid,* as described in Appendix A of SAE Standard J1703, November 1983, *Motor Vehicle Brake Fluid,* November 1983.

(b) Until October 26, 1986, a manufacturer may use either SAE RM-66-03, or SAE RM-1 Compatibility Fluid as described in Appendix A of SAE Standard J1703b, *Motor Vehicle Brake Fluid,* July 1970. See S6.

S6.5.4.2 Procedure.

(a) With *RM-66-03:* Except as provided in S6.5.4.2(b), mix 30 ± 1 ml of the brake fluid with 30 ± 1 ml of SAE RM-66-03 *Compatibility Fluid* in a boiling point flask (S6.1.2(a)). Determine the initial ERBP of the mixture by applying heat to the flask so that the fluid is refluxing in 10 ± 2 minutes at a rate of excess of 1 drop per second, but not more than 5 drops per second. Note the maximum fluid temperature observed during the first minute after the fluid begins refluxing at a rate in excess of 1 drop per second. Over the next 15 ± 1 minutes, adjust and maintain the reflux rate at 1 to 2 drops per second. Maintain this rate for an additional 2 minutes, recording the average value of four temperature readings taken at 30-second intervals as the final ERBP.

(b) With *RM-1:* Until October 26, 1986, a manufacturer may use either RM-66-03, or SAE RM-1 *Compatibility Fluid* as described in Appendix A of SAE Standard J1703b, *Motor Vehicle Brake Fluid,* July 1970. See S6.

(c) Thermometer and barometic corrections are not required. **(51 F.R. 16699—May 6, 1986. Effective: May 6, 1986)]**

S6.5.4.3 Calculation. The difference between the initial ERBP and the final average temperature is the change in temperature of the refluxing mixture. Average the results of the duplicates to the nearest 0.5°C (1°F).

S6.6 Corrosion. Evaluate the corrosiveness of a brake fluid by running duplicate samples according to the following procedure.

S6.6.1 Summary of the procedure. Six specified metal corrosion test strips are polished, cleaned, and weighed, then assembled as described. Assembly is placed on a standard wheel cylinder cup in a corrosion test jar, immersed in the water-wet brake fluid, capped and placed in an oven at 100°C (212°F) for 120 hours. Upon removal and cooling, the strips, fluid, and cups are examined and tested.

S6.6.2 Equipment.

(a) *Balance.* An analytical balance having a minimum capacity of 50 grams and capable of weighing to the nearest 0.1 mg.

(b) *Desiccators.* Desiccators containing silica gel or other suitable desiccant.

(c) *Oven.* Gravity convection oven capable of maintaining the desired set point within 2°C (3.6°F).

(d) *Micrometer.* A machinist's micrometer 25 to 50 mm (1 to 2 inches) capacity, or an optical comparator, capable of measuring the diameter of the SBR wheel cylinder (WC) cups to the nearest 0.02 mm (0.001 inch).

S6.6.3 Materials.

(a) *Corrosion test strips.* Two sets of strips from each of the metals listed in Appendix C of SAE Standard J1703b. Each strip shall be approximately 8 cm long, 1.3 cm wide, not more than 0.6 cm thick, and have a surface area of 25 ± 5 sq cm and a hole 4 to 5 mm (0.16 to 0.20 inch) in diameter on the centerline about 6 mm from one end. The hole shall be clean and free from burrs. Tinned iron strips shall be unused. Other strips, if used, shall not be employed if they cannot be polished to a high finish.

(b) *SBR cups.* Two unused standard SAE SBR wheel cylinder (WC) cups, as specified in S7.6.

(c) *Corrosion test jars and lids.* Two screw-top straight-sided round glass jars, each having a capacity of approximately 475 ml and inner dimensions of approximately 100 mm in height and 75 mm in diameter, and a tinned steel lid (no insert or organic coating) vented with a hole 0.8 ± 0.1 mm (0.031 ± 0.004 inch) in diameter (No. 68 drill).

(d) *Machine screws and nuts.* Clean, rust and oil-free, uncoated mild steel round or fillister head machine screws, size 6 or 8–32 UNC-Class 2A, ⅝ or ¾ inch long (or equivalent metric sizes), and matching uncoated nuts.

(e) *Supplies for polishing strips.* Waterproof silicon carbide paper, grit No. 320 A; grade 00 steel wool, lint-free polishing cloth.

(f) *Distilled water* as specified in S7.1.

(g) *Ethanol* as specified in S7.3.

(h) *Isopropanol* as specified in S7.7.

S6.6.4 Preparation.

(a) *Corrosion test strips.* Except for the tinned iron strips, abrade corrosion test strips on all surface areas with silicon carbide paper wet with ethanol (isopropanol when testing DOT 5 fluids) until all surface scratches, cuts and pits are removed. Use a new piece of paper for each different type of metal. Polish the strips with the 00 grade steel wool. Wash all strips, including the tinned iron and the assembly hardware, with ethanol; dry the strips and assembly hardware with a clean lint-free cloth or use filtered compressed air and place the strips and hardware in a desiccator containing silica gel or other suitable desiccant and maintained at 23±5°C (73.4±9°F), for at least one hour. Handle the strips with forceps after polishing. Weigh and record the weight of each strip to the nearest 0.1 mg. Assemble the strips on a clean dry machine screw, with matching plain nut, in the order of tinned iron, steel, aluminum, cast iron, brass, and copper. Bend the strips, other than the cast iron, so that there is a separation of 3±½ mm (⅛±1/64 inch) between adjacent strips for a distance of about 5 cm (2 inches) from the free end of the strips. (See Figure 4.) Tighten the screw on each test strip assembly so that the strips are in electrolytic contact, and can be lifted by either of the outer strips (tinned iron or copper) without any of the strips moving relative to the others when held horizontally. Immerse the strip assemblies in 90 percent ethyl alcohol. Dry with dried filtered compressed air, then desiccate at least one hour before use.

(b) *SBR WC cups.* Measure the base diameters of the 2 standard SBR cups, using an optical comparator or micrometer, to the nearest 0.02 mm (0.001 inch) along the centerline of the SAE and rubber-type identifications and at right angles to this centerline. Take the measurements at least 0.4 mm (0.015 inch) above the bottom edge and

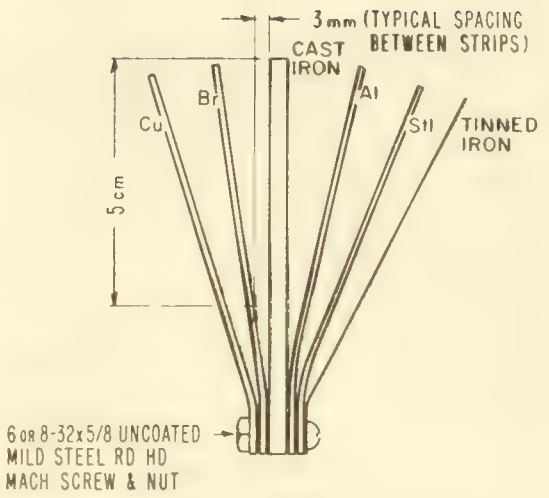


FIG. 4
CORROSION STRIP ASSEMBLY

parallel to the base of the cup. Discard any cup if the two measured diameters differ by more than 0.08 mm (0.003 inch). Average the two readings on each cup. Determine the hardness of the cups according to S7.4.

S6.6.5 Procedure. Rinse the cups in ethanol (isopropanol when testing DOT 5 fluids) for not more than 30 seconds and wipe dry with a clean lint-free cloth. Place one cup with lip edge facing up in each jar. Insert a metal strip assembly inside each cup with the fastened end down and the free end extending upward. (See Figure 5.) When testing DOT 3 and DOT 4 brake fluids, mix 760 ml of brake fluid with 40 ml of distilled water, or, when testing DOT 5 brake fluids, humidify 800 ml of brake fluid in accordance with S6.2, eliminating determination of the ERBP; using this water-wet mixture, cover each strip assembly to a minimum depth of 10 mm above the tops of the strips. Tighten the lids and place the jars for 120±2 hours in an oven maintained at 100±2°C (212±3.6°F). Allow the jars to cool at 23±5°C (73.4±9°F) for 60 to 90 minutes. Impmediately remove the strips from the jars using forceps, agitating the strip assembly in the fluid to remove adhering sediment. Examine the test strips and jars for adhering crystalline deposits. Disassemble the metal strips, and remove adhering fluid by flushing with water; clean each strip by wiping with a clean cloth wetted with ethanol. Examine the strips for evidence of corrosion and pitting. Disregard staining or

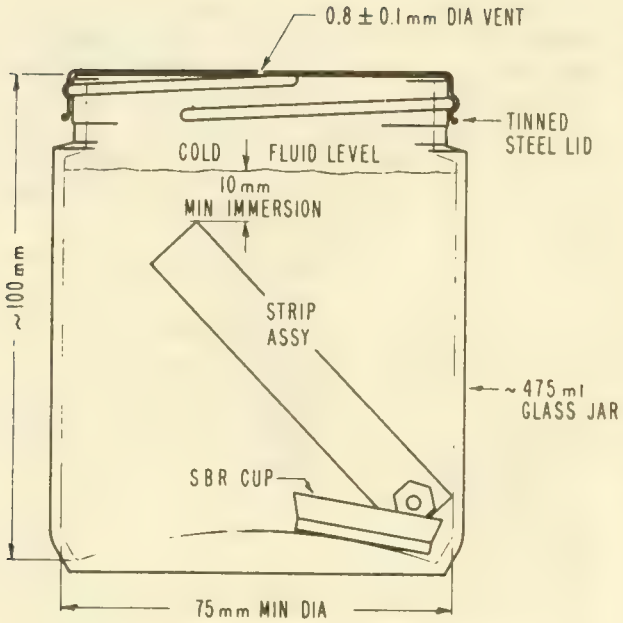


FIG. 5
CORROSION TEST APPARATUS

discoloration. Place the strips in a desiccator containing silica gel or other suitable desiccant, maintained at 23±5°C (73.4±9°F), for at least 1 hour. Weigh each strip to the nearest 0.1 mg. Determine the change in weight of each metal strip. Average the results for the two strips of each type of metal. Immediately following the cooling period, remove the cups from the jars with forceps. Remove loose adhering sediment by agitation of the cups in the mixture. Rinse the cups in ethanol and air-dry. Examine the cups for evidence of sloughing, blisters, and other forms of disintegration. Measure the base diameter and hardness of each cup within 15 minutes after removal from the mixture. Examine the mixture for gelling. Agitate the mixture to suspend and uniformly disperse sediment. From each jar, transfer a 100 ml portion of the mixture to an ASTM cone-shaped centrifuge tube. Determine the percent sediment after centrifuging as described in S7.5. Measure the pH value of the DOT 3 and DOT 4 test mixture according to S6.4.6.

S6.6.6 Calculation.

(a) Measure the area of each type of test strip to the nearest square centimeter. Divide the average change in weight for each type by the area of that type.

(b) Note other data and evaluations indicating compliance with S5.1.6. In the event of a marginal pass on inspection by attributes, or of a failure in one of the duplicates, run another set of duplicate samples. Both repeat samples shall meet all requirements of S5.1.6.

S6.7 Fluidity and appearance at low temperatures. Determine the fluidity and appearance of a sample of brake fluid at each of two selected temperatures by the following procedure.

S6.7.1 Summary of procedure. Brake fluid is chilled to expected minimum exposure temperatures and observed for clarity, gellation, sediment, separation of components, excessive viscosity or thixotropy.

S6.7.2 Apparatus.

(a) *Oil sample bottle.* Two clear flint glass 4-ounce bottles made especially for sampling oil and other liquids, with a capacity of approximately 125 ml, an outside diameter of 37.0±0.05 mm and an overall height of 165±2.5 mm.

(b) *Cold chamber.* An air bath cold chamber capable of maintaining storage temperatures down to minus 55°C (minus 67°F) with an accuracy of±2°C (3.6°F).

(c) *Timing device.* A timing device in accordance with S6.3.2(e).

S6.7.3 Procedure.

(a) Place 100±1 ml of brake fluid at room temperature in an oil sample bottle. Stopper the bottle with an unused cork and place in the cold chamber at the higher storage temperature specified in Table II (S5.1.7(c)). After 144±4 hours remove the bottle from the chamber, quickly wipe it with a clean, lint-free cloth, saturated with ethanol (isopropanol when testing DOT 5 fluids) or acetone. Examine the fluid for evidence of sludging, sedimentation, crystallization, or stratification. Invert the bottle and determine the number of seconds required for the air bubble to travel to the top of the fluid. Let sample warm to room temperature and examine.

(b) Repeat S6.7.3(a), substituting the lower cold chamber temperature specified in Table II, and a storage period of 6 hours ± 12 minutes. Note: Test specimens from either storage temperature may be used for the other only after warming up to room temperature.

S6.8 Evaporation. The evaporation residue, and pour point of the evaporation residue of brake fluid, are determined by the following procedure. Four replicate samples are run.

S6.8.1 Summary of the procedure. The volatile diluent portion of a brake fluid is evaporated in an oven at 100°C (212°F). The non-volatile lubricant portion (evaporation residue) is measured and examined for grittiness; the residues are then combined and checked to assure fluidity at minus 5°C (23°F).

S6.8.2 Apparatus.

(a) *Petri dishes.* Four covered glass petri dishes approximately 100 mm in diameter and 15 mm in height.

(b) *Oven.* A top-vented gravity-convection oven capable of maintaining a temperature of 100±2°C (212±3.6°F).

(c) *Balance.* A balance having a capacity of at least 100 grams, capable of weighing to the nearest 0.01 gram, and suitable for weighing the petri dishes.

(d) *Oil sample bottle.* A glass sample bottle as described in S6.7.2(a).

(e) *Cold chamber.* Air bath cold chamber capable of maintaining an oil sample bottle at minus 5±1° C (23±2° F).

(f) *Timing device.* A timing device as described in S6.3.2(e).

S6.8.3 Procedure. Obtain the tare weight of each of the four covered petri dishes to the nearest 0.01 gram. Place 25±1 ml of brake fluid in each dish, replace proper covers and reweigh. Determine the weight of each brake fluid test specimen by the difference. Place the four dishes, each inside its inverted cover, in the oven at 100±2°C (212±3.6°F) for 46±2 hours. (Note: Do not simultaneously heat more than one fluid in the same oven.) Remove the dishes from the oven, allow to cool to 23±5°C (73.4±9°F), and weigh. Return to the oven for an additional 24±2 hours. If at the end of 72±4 hours the average loss by evaporation is less than 60 percent, discontinue the evaporation procedure and proceed with examination of the residue. Otherwise, continue this procedure either until equilibrium is reached as evidenced by an incremental weight loss of less than 0.25 gram in 24 hours on all individual dishes or for a maximum of 7 days. During the heating and weighing operation, if it is necessary to remove the dishes from the oven for a period of longer than 1 hour, the dishes shall be stored in a desiccator as soon as cooled to room temperature. Calculate the percentage of fluid evaporated from each dish. Examine the residue in the dishes at the end of 1 hour at 23±5°C (73.4±9°F). Rub any sediment with the fingertip to determine grittiness or abrasiveness. Combine the residues from all four dishes in a 4-ounce oil sample bottle and store vertically in a cold chamber at minus 5±1°C (23±2°F) for 60±10 minutes. Quickly remove the bottle and place in the horizontal position. The residue must flow at least 5 mm (0.2 inch) along the tube within 5 seconds.

S6.8.4 Calculation. The average of the percentage evaporated from all four dishes is the loss by evaporation.

S6.9 Water tolerance. Evaluate the water tolerance characteristics of a brake fluid by running one test specimen according to the following procedure.

S6.9.1 Summary of the procedure. DOT 3 and DOT 4 brake fluid is diluted with 3.5 percent water, and DOT 5 brake fluid is humidified, then stored at minus 40°C (minus 40°F) for 120 hours. The cold, water-wet fluid is first examined for clarity, stratification, and sedimentation, then placed in an oven at 60°C (140°F) for 24 hours. On removal, it is again examined for stratification and the volume percent of sediment determined by centrifuging.

S6.9.2 Apparatus.

(a) *Centrifuge tube.* See S7.5.1(a).
(b) *Centrifuge.* See S7.5.1(b).
(c) *Cold chamber.* See S6.7.2(b).
(d) *Oven.* Gravity or forced convection oven.
(e) *Timing device.* See S6.3.2(e).

S6.9.3 Procedure.

(a) *At low temperature.* Humidify 100±1 ml of DOT 5 brake fluid in accordance with S6.2 eliminating determination of the ERBP. When testing DOT 3 and DOT 4 brake fluids, mix 3.5±0.1 ml. of distilled water with 100±1 ml of the brake fluid; pour into a centrifuge tube. Stopper the tube with a clean cork and place in the cold chamber maintained at minus 40±2°C (minus 40±3.6°F). After 120 ±2 hours remove the

tube, quickly wipe with clean lint-free cloth saturated with ethanol or acetone and examine the fluid, for evidence of sludging, sedimentation, crystallization, or stratification. Invert the tube and determine the number of seconds required for the air bubble to travel to the top of the fluid. (The air bubble is considered to have reached the top of the fluid when the top of the bubble reaches the 2 ml graduation of the centrifuge tube.) If the wet fluid has become cloudy, warm to 23±5°C (73.4±9°F) and note appearance and fluidity.

(b) *At 60°C (140°F).* Place tube and brake fluid from S6.9.3(a) in an oven maintained at 60±2°C (140±2.6°F) for 24±2 hours. Remove the tube and immediately examine the contents for evidence of stratification. Determine the percent sediment by centrifuging as described in S7.5.

S6.10 Compatibility. The compatibility of a brake fluid with other brake fluids shall be evaluated by running one test sample according to the following procedure.

S6.10.1 Summary of the procedure.

(a) *With RM-66-03:* Except as provided in S6.10.1(b), brake fluid is mixed with an equal volume of SAE RM-66-03 *Compatibility Fluid,* then tested in the same way as for water tolerance (S6.9) except that the bubble flow time is not measured. This test is an indication of the compatibility of the test fluid with other motor vehicle brake fluids at both high and low temperatures.

(b) *With RM-1:* Until November 3, 1986, a manufacturer may use either RM-66-03, or SAE RM-1 *Compatibility Fluid* as described in Appendix A of SAE Standard J1703b,*Motor Vehicle Brake Fluid,* July 1970. See S6. This test is an indication of the compatibility of the test fluid with other motor vehicle brake fluids at both high and low temperatures.

S6.10.2 Apparatus and materials.

(a) *Centrifuge tube.* See S7.5.1(a).

(b) *Centrifuge.* See S7.5.1(b).

(c) *Cold chamber.* See S6.7.2(b).

(d) *Oven.* See S6.9.2(d).

(e) Except as provided in S6.10.2(f), *SAE RM-66-03 Compatibility Fluid.* As described in Appendix A of SAE Standard J1703, November 1983, *Motor Vehicle Brake Fluid,* November 1983.

(f) Until November 3, 1986, a manufacturer may use either RM-66-03, or SAE RM-1 *Compatibility Fluid* as described in Appendix A of SAE Standard J1703b, *Motor Vehicle Brake Fluid,* July 1970. See S6.

S6.10.3 Procedure.

[(a) *At low temperature.*

(1) *With RM-66-03:* Except as provided in S6.10.3(a)(2), mix 50±0.5 ml of brake fluid with 50±0.5 ml of SAE RM-66-03 *Compatibility Fluid.* Pour this mixture into a centrifuge tube and stopper with a clean dry cork. Place tube in the cold chamber maintained at minus 40±2°C (minus 40±3.6°F). After 24±2 hours, remove tube, quickly wipe with a clean lint-free cloth saturated with ethanol (isopropanol when testing DOT 5 fluids) or acetone. Examine the test specimen for evidence of sludging, sedimentation, or crystallization. DOT 3 and DOT 4 test fluids shall also be examined for stratification.

(2) *With RM-1.* Until November 3, 1986, a manufacturer may use either RM-66-03, or SAE RM-1 *Compatibility Fluid* as described in Appendix A of SAE Standard J1703b, *Motor Vehicle Brake Fluid,* July 1970. See S6. **(51 F.R. 16699—May 6, 1986. Effective: May 6, 1986)]**

(b) *At 60°C (140°F).* Place tube and test fluid from S6.10.3(a) for 24±2 hours in an oven maintained at 60±2°C (140±3.6°F). Remove tube and immediately examine the contents of DOT 3 and DOT 4 test mixtures for evidence of stratification. Determine percent sediment by centrifuging as described in S7.5.

S6.11 Resistance to oxidation. The stability of a brake fluid under oxidative conditions shall be evaluated by running duplicate samples according to the following procedure.

S6.11.1 Summary of the procedure. DOT 3 and DOT 4 brake fluids are activated with a mixture of approximately 0.2 percent benzoyl peroxide and 5 percent water. DOT 5 brake fluid is humidified in accordance with S6.2 eliminating determination of the ERBP, and then approximately 0.2 percent benzoyl peroxide is added. A corrosion test strip assembly consisting of a cast iron and an aluminum strip separated by tinfoil squares at each end is then rested on a piece of SBR WC cup positioned so that the test strip is half immersed in the fluid, and ovenaged at 70°C (158°F) for 168 hours. At the end of this period the metal strips are examined for pitting, etching, and weight loss.

S6.11.2 Equipment.

(a) *Balance.* See S6.6.2(a).

(b) *Desiccators.* See S6.6.2(b).

(c) *Oven.* See S6.6.2(c).

(d) Three glass test tubes approximately 22 mm outside diameter by 175 mm in length.

S6.11.3 Reagents and materials.

(a) *Benzoyl peroxide, reagent grade, 96 percent.* (Benzoyl peroxide that is brownish, or dusty, or has less than 90 percent purity, must be discarded.) Reagent strength may be evaluated by ASTM E298–68, *Standard Methods for Assay of Organic Peroxides.*

(b) *Corrosion test strips.* Two sets of cast iron and aluminum metal test strips as described in Appendix C of SAE Standard J1703b.

(c) *Tinfoil.* Four unused pieces of tinfoil approximately 12 mm (½ inch) square and between 0.02 and 0.06 mm (0.0008 and 0.0024 inch) in thickness. The foil shall be at least 99.9 percent tin and contain not more than 0.024 percent lead.

(d) *SBR cups.* Two unused, approximately one-eight sections of a standard SAE SBR WC cup (as described in S7.6).

(e) *Machine screw and nut.* Two clean oilfree, No. 6 or 8–32 × ⅜ or ½ inch long (or equivalent metric size), round or fillister head, uncoated mild steel machine screws, with matching plain nuts.

S6.11.4 Preparation.

(a) *Corrosion test strips.* Prepare two sets of aluminum and cast iron tests strips according to S6.6.4(a) except for assembly. Weigh each strip to the nearest 0.1 mg and assemble a strip of each metal on a machine screw, separating the strips at each end with a piece of tinfoil. Tighten the nut enough to hold both pieces of foil firmly in place.

(b) *Test mixture.* Place 30±1 ml of the brake fluid under test in a 22 by 175 mm test tube. For DOT 3 and DOT 4 fluids, add 0.060±.002 gram of benzoyl peroxide, and 1.50±0.05 ml of distilled water. For DOT 5 fluids, use test fluid humidified in accordance with S6.2, and add only the benzoyl peroxide. Stopper the tube loosely with a clean dry cork, shake, and place in an oven for 2 hours at 70±2°C (158±3.6°F). Shake every 15 minutes to effect solution of the peroxide, but do not wet work. Remove the tube from the oven and allow to cool at 23±5°C (73.4±9°F). Begin testing according to paragraph S6.11.5 not later than 24 hours after removal of tube from oven.

S6.11.5 Procedure. Place a one-eighth SBR cup section in the bottom of each tube. Add 10 ml of prepared test mixture to each test tube. Place a metal-strip assembly in each, the end of the strip without the screw resting on the rubber, and the solution covering about one-half the length of the strips. Stopper the tubes with clean dry corks and store upright for 70±2 hours at 23±5°C (73.4±9°F). Loosen the corks and place the tubes for 168±2 hours in an oven maintained at 70±2°C (158±3.6°F). Afterwards remove and disassemble strips. Examine the strips and note any gum deposits. Wipe the strips with a clean cloth wet with ethanol (isopropanol when testing DOT 5 fluids) and note any pitting, etching or roughening of surface, disregarding stain or discoloration. Place the strips in a desiccator over silica gel or other suitable desiccant, at 23±5°C (73.4±9°F) for at least 1 hour. Again weigh each strip to the nearest 0.1 mg.

S6.11.6 Calculation. Determine corrosion loss by dividing the change in weight of each metal strip by the total surface area of each strip measured in square centimeters, to the nearest square centimeter. Average the results for the two strips of each type of metal, rounding to the nearest 0.05 mg per square centimeter. If only one of the duplicates fails for any reason, run a second set of duplicate samples. Both repeat samples shall meet all requirements of S5.1.11.

S6.12 Effect on SBR cups. The effects of a brake fluid in swelling, softening, and otherwise affecting standard SBR WC cups shall be evaluated by the following procedure.

S6.12.1 Summary of the procedure. Four standard SAE SBR WC cups are measured and their hardnesses determined. The cups, two to a jar, are immersed in the test brake fluid. One jar is heated for 70 hours at 70°C (158°F), and the other for 70 hours at 120°C (248°F). Afterwards, the cups are washed, examined for disintegration, remeasured, and their hardnesses redetermined.

S6.12.2 Equipment and supplies.

(a) *Oven.* See S6.6.2(c).

(b) *Glass jars and lids.* Two screw-top, straight-sided round glass jars, each having a capacity of approximately 250 ml and inner dimensions of approximately 125 mm in height and 50 mm in diameter, and a tinned steel lid (no insert or organic coating).

(c) *SBR cups.* See S7.6.

S6.12.3 Preparation. Measure the base diameters of the SBR cups as described in S6.6.4(b), and the hardness of each as described in S7.4.

S6.12.4 Procedure. Wash the cups in 90 percent ethanol (isopropanol when testing DOT 5 fluids) (see S7.3), for not longer than 30 seconds and quickly dry with a clean, lint-free cloth. Using forceps, place two cups into each of the two jars; add 75 ml of brake fluid to each jar and cap tightly. Place one jar in an oven held at 70°±2°C (158±3.6°F) for 70±2 hours. Place the other jar in an oven held at 120±2°C (248±3.6°F) for 70±2 hours. Allow each jar to cool for 60 to 90 minutes at 23±5°C (73.4±9°F). Remove cups, wash with ethanol for not longer than 30 seconds, and quickly dry. Examine the cups for disintegration as evidenced by stickiness, blisters, or sloughing. Measure the base diameter and hardness of each cup within 15 minutes after removal from the fluid.

S6.12.5 Calculation.

(a) Calculate the change in base diameter for each cup. If the two values, at each temperature, do not differ by more than 0.10 mm (0.004 inch) average them to the nearest 0.02 mm (0.001 inch). If the two values differ by more than 0.10 mm, repeat the test at the appropriate temperature and average the four values as the change in base diameter.

(b) Calculate the change in hardness for each cup. The average of the two values for each pair is the change in hardness.

(c) Note disintegration as evidenced by stickiness, blisters, or sloughing.

S6.13 Stroking properties. Evaluate the lubricating properties, component compatibility, resistance to leakage, and related qualities of a brake fluid by running one sample according to the following procedures.

[S6.13.1 Summary of the procedure. Brake fluid is stroked under controlled conditions at an elevated temperature in a simulated motor vehicle hydraulic braking system consisting of three slave wheel cylinders and an actuating master cylinder connected by steel tubing. Referee standard parts are used. All parts are carefully cleaned, examined, and certain measurements made immediately prior to assembly for test. During the test, temperature, rate of pressure rise, maximum pressure, and rate of stroking are specified and controlled. The system is examined periodically during stroking to assure that excessive leakage of fluid is not occurring. Afterwards, the system is torn down. Metal parts and SBR cups are examined and remeasured. The brake fluid and any resultant sludge and debris are collected, examined, and tested.

S6.13.2 Apparatus and equipment.

Either the drum and shoe type of stroking apparatus (see Figure 1 of SAE Standard J1703b) except using only three sets of drum and shoe assemblies, or the stroking fixture type apparatus as shown in Figure 2 of SAE J1703, November 1983, with the components arranged as shown in Figure 1 of SAE J1703, November 1983. The following components are required.

(a) *Brake assemblies.* With the drum and shoe apparatus: three drum and shoe assembly units (SAE RM-29a) consisting of three forward brake shoes and three reverse brake shoes with linings and three front wheel brake drum assemblies with assembly component parts. With stroking fixture type apparatus: three fixture units including appropriate adapter mounting plates to hold brake wheel cylinder assemblies. **(51 F.R. 16699—May 6, 1986. Effective: May 6, 1986)]**

(b) *Braking pressure actuation mechanism.* An actuating mechanism for applying a force to the master cylinder pushrod without side thrust. The amount of force applied by the actuating mechanism shall be adjustable and capable of applying sufficient thrust to the master cylinder to create a pressure of at least 70 kg/sq cm (1,000 psi) in the simulated brake system. A hydraulic gauge or pressure recorder, having a range of at least 0 to 70 kg/sq cm (0 to 1,000 psi), shall be installed between the master cylinder and the brake assemblies and shall be provided with a shut-off valve and with a bleeding valve for removing air from the connecting tubing. The actuating mechanism shall be designed to permit adjustable stroking rates of approximately 1,000 strokes per hour. Use a mechanical or electrical counter to record the total number of strokes.

[(c) *Heated air bath cabinet.* An insulated cabinet or oven having sufficient capacity to house the three mounted brake assemblies or stroking fixture assemblies, master cylinder, and necessary connections. A thermostatically controlled heating system is required to maintain a temperature of 70±5°C (158±9°F) or 120±5°C (248±9°F). Heaters shall be shielded to prevent direct radiation to wheel or master cylinder. **(51 F.R. 16699—May 6, 1986. Effective: May 6, 1986)]**

(d) *Master cylinder (MC) assembly (SAE RM-15a).* One cast iron housing hydraulic brake system cylinder having a diameter of approximately 28 mm (1⅛ inch) and fitted for a filler cap and standpipe (see S6.13.2(e)). The MC piston shall be made from SAE CA360 copperbase alloy (half hard). A new MC assembly is required for each test.

(e) *Filler cap and standpipe.* MC filler cap provided with a glass or uncoated steel standpipe. Standpipe must provide adequate volume for thermal expansion, yet permit measurement and adjustment of the fluid level in the system to ±3 ml Cap and standpipe may be cleaned and reused.

[(f) *Wheel cylinder (WC) assemblies (SAE RM-14a).* Three unused cast iron housing straight bore hydraulic brake WC assemblies having diameters of approximately 28 mm (1⅛ inch) for each test. Pistons shall be made from unanodized SAE AA2024 aluminum alloy. **(51 F.R. 16699—May 6, 1986. Effective: May 6, 1986)]**

(g) *Micrometer.* Same as S6.6.2(d).

S6.13.3 Materials.

[(a) *Standard SBR brake cups.* Six standard SAE SBR wheel cylinder test cups, one primary test cup, and one secondary MC test cup, all as described in S7.6, for each test. **(51 F.R. 16699—May 6, 1986. Effective: May 6, 1986)]**

(b) *Steel tubing.* Double wall steel tubing meeting SAE specification J527. A complete replacement of tubing is essential when visual inspection indicates any corrosion or deposits on inner surface of tubing. Tubing from master cylinder to one wheel cylinder shall be replaced for each test (minimum length 3 feet). Uniformity in tubing size is required between master cylinder and wheel cylinder. The standard master cylinder has two outlets for tubing, both of which must be used.

S6.13.4 Preparation of test apparatus.

(a) *Wheel cylinder assemblies.* Use unused wheel cylinder assemblies. Disassemble cylinders and discard cups. Clean all metal parts with ethanol (ispropanol when testing DOT 5 fluids). Inspect the working surfaces of all metal parts for scoring, galling, or pitting and cylinder bore roughness, and discard all defective parts. Remove any stains on cylinder walls with crocus cloth and ethanol. If stains cannot be removed, discard the cylinder. Measure the internal diameter of each cylinder at a location approximately 19mm (0.75 inch) from each end of the cylinder bore, taking measurements in line with the hydraulic inlet opening and at right angles to this centerline. Discard the cylinder if any of these four readings exceeds the maximum or minimum limits of 28.66 to 28.60 mm (1.128 to 1.126 inches). Measure the outside diameter of each piston at two points approximately 90 degrees apart. Discard any piston if either reading exceeds the maximum or minimum limits of 28.55 to 28.52 mm (1.124 to 1.123 inches). Select parts to insure that the clearance between each piston and matching cylinder is within 0.08 to 0.13 mm (0.003 to 0.005 inch). Use unused SBR cups. To remove dirt and debris, rinse the cups in 90 percent ethyl alcohol for not more than 30 seconds and wipe dry with a clean lint-free cloth. Discard any cups showing defects such as cuts, molding flaws, or blisters. Measure the lip and base diameters of all cups with an optical comparator or micrometer to the nearest 0.02 mm (0.001 inch) along the centerline of the SAE and rubber-type indentifications and at right angles to this centerline. Determine base diameter measurements at least 0.4 mm (0.015 inch) above the bottom edge and parallel to the base of the cup. Discard any cup if the two measured lip or base diameters differ by more than 0.08 mm (0.003 inch). Average the lip and base diameters of each cup. Determine the hardness of all cups according to S7.4. Dip the rubber and metal parts of wheel cylinders, except housing and rubber boots, in the fluid to be tested and install them in accordance with the manufacturer's instructions. Manually stroke the cylinders to insure that they operate easily. Install cylinders in the simulated brake system.

(b) *Master cylinder assembly.* Use an unused master cylinder and unused standard SBR primary and secondary MC cups which have been inspected, measured and cleaned in the manner specified in S6.13.4(a), omitting hardness of the secondary MC cup. However, prior to determining the lip and base diameters of the secondary cup, dip the cup in test brake fluid, assemble on the MC piston, and maintain the assembly in a vertical position at 23±5°C (73.4±9°F) for at least 12 hours. Inspect the relief and supply ports of the master cylinder; discard the cylinder if ports have burrs or wire edges. Measure the internal diameter of the cylinder at two locations (approximately midway between the relief and supply ports and approximately 19 mm (0.75 inch) beyond the relief port toward the bottom or discharge end of the

bore), taking measurements at each location on the vertical and horizontal centerline of the bore. Discard the cylinder if any reading exceeds the maximum or minimum limits of 28.65 to 28.57 mm (1.128 to 1.125 inches). Measure the outside diameter of each end of the master cylinder piston at two points approximately 90 degrees apart. Discard the piston if any of these four readings exceeds the maximum or minimum limits of 28.55 to 28.52 mm (1.124 to 1.123 inches). Dip the rubber and metal parts of the master cylinder, except the housing and push rod-boot assembly, in the brake fluid and install in accordance with manufacturer's instructions. Manually stroke the master cylinder to insure that it operates easily. Install the master cylinder in the simulated brake system.

[(c) *Assembly and adjustment of test apparatus.* When using a shoe and drum type apparatus, adjust the brake shoe toe clearances to 1.0±0.1 mm (0.040±0.004 inch). Fill the system with brake fluid, bleeding all wheel cylinders and the pressure gage to remove entrapped air. Operate the actuator manually to apply a pressure greater than the required operating pressure and inspect the system for leaks. Adjust the actuator and/or pressure relief valve to obtain a pressure of 70± 3.5 kg/sq cm (1,000±50 psi). A smooth pressure-stroke pattern is required when using a shoe and drum type apparatus. The pressure is relatively low during the first part of the stroke and then builds up smoothly to the maximum stroking pressure at the end of the stroke, to permit the primary cup to pass the compensating hole at a relatively low pressure. Using stroking fixtures, adjust the actuator and/or pressure relief valve to obtain a pressure of 70±3.5 kg/sq cm (1,000 ±50 psi).

Adjust the stroking rate to 1,000±100 strokes per hour. Record the fluid level in the master cylinder standpipe. **(51 F.R. 16699—May 6, 1986. Effective: May 6, 1986)]**

S6.13.5 Procedure. Operate the system for 16,000±1,000 cycles at 23±5°C (73.4±9°F). Repair any leakage, readjust the brake shoe clearances, and add fluid to the master cylinder standpipe to bring to the level originally recorded, if necessary. Start the test again and raise the temperature of the cabinet within 6±2 hours to 120±5°C (248±9°F). During the test observe operation of wheel cylinders for improper functioning and record the amount of fluid required to replenish any loss, at intervals of 24,000 strokes. Stop the test at the end of 85,000 total recorded strokes. These totals shall include the number of strokes during operation at 23±5°C (73.4±9°F) and the number of strokes required to bring the system to the operating temperature. Allow equipment to cool to room temperature. Examine the wheel cylinders for leakage. Stroke the assembly an additional 100 strokes, examine wheel cylinders for leakage and record volume loss of fluid. Within 16 hours after stopping the test, remove the master and wheel cylinders from the system, retaining the fluid in the cylinders by immediately capping or plugging the ports. Disassemble the cylinders, collecting the fluid from the master cylinder and wheel cylinders in a glass jar. When collecting the stroked fluid, remove all residue which has deposited on rubber and metal internal parts by rinsing and agitating such parts in the stroked fluid and using a soft brush to assure that all loose adhering sediment is collected. Clean SBR cups in ethanol (isopropanol when testing DOT 5 fluids) and dry. Inspect the cups for stickiness, scuffing, blistering, cracking, chipping, and change in shape from original appearance. Within 1 hour after disassembly, measure the lip and base diameters of each cylinder cup by the procedures specified in S6.13.4(a) and (b) with the exception that lip or base diameters of cups may now differ by more than 0.08 mm (0.003 inch). Determine the hardness of each cup according to S7.4. Note any sludge or gel present in the test fluid. Within 1 hour after draining the cylinders, agitate the fluid in a glass jar to suspend and uniformly disperse sediment and transfer a 100 ml portion of this fluid to a centrifuge tube and determine percent sediment as described in S7.5. Allow the tube and fluid to stand for 24 hours, recentrifuge and record any additional sediment recovered. Inspect cylinder parts, note any gumming or any pitting on pistons and cylinder walls. Disregard staining or discoloration. Rub any deposits adhering to cylinder walls with a clean soft cloth wetted with ethanol to determine abrasiveness and removability. Clean cylinder parts in ethanol and dry. Measure and record diameters of pistons and cylinders according to S6.13.4(a) and (b). Repeat the test if mechanical failure occurs that may affect the evaluation of the brake fluid.

S6.13.6 Calculation.

(a) Calculate the changes in diameters of cylinders and pistons (see S5.1.13 (b)).

(b) Calculate the average decrease in hardness of the seven cups tested, as well as the individual values (see S5.1.13(c)).

(c) Calculate the increases in base diameters of the eight cups (see S5.1.13(e)).

(d) Calculate the lip diameter interference set for each of the eight cups by the following formula and average the eight values (see S5.1.13(f)).

$$\frac{D_1-D_2}{D_1-D_3} \times 100 = \text{percentage Lip Diameter Interference Set}$$

Where:

D_1 = Original lip diameter
D_2 = Final lip diameter
D_3 = Original cylinder bore diameter

[S6.14 Container information. Each container with information marked directly on the container surface or on a label (labels) affixed to the container persuant to S5.2.2.2 or S5.2.2.3 is subjected to the following procedure:

(a) If the container has a label affixed to it, make a single vertical cut all the way through the label with the container in the vertical position.

(b) Immerse the container in the same brake fluid or hydraulic system mineral oil contained therin for 15 minutes at room temperature (23 ± 5°C; 73.4 ± 9°F).

(c) Within 5 minutes after removing the container from the fluid or oil, remove excess liquid from the surface of the container by wiping with a clean dry cloth.] **(53 F.R. 24272—July 28, 1988. Effective: December 27, 1988)**

S7. Auxiliary test methods and reagent standards.

S7.1 Distilled water. Non-referee reagent water as specified in ASTM D1193-70, "Standard Specifications for Reagent Water," or water of equal purity.

S7.2 Water content of motor vehicle brake fluids. Use analytical methods based on ASTM D1123-59, *Standard Method of Test for Water in Concentrated Engine Antifreezes by the Iodine Reagent Method,* for determining the water content of brake fluids, or other methods of analysis yielding comparable results. To be acceptable for use, such other method must measure the weight of water added to samples of the SAE RM-66-03 and TEGME *Compatibility Fluids* within ±15 percent of the water added for additions up to 0.8 percent by weight, and within ±5 percent of the water added for additions greater than 0.8 percent by weight. The SAE RM-66-03 *Compatibility Fluid* used to prepare the samples must have an original ERBP of not less than 205°C (401°F) when tested in accordance with S6.1. The SAE TEGME fluid used to prepare the samples must have an original ERBP of not less than 240°C (464°F) when tested in accordance with S6.1.

Until November 3, 1986, a manufacturer may use either RM-66-03 and TEGME or SAE RM-1 *Compatibility Fluid.* See S6. To be acceptable for use, such other method must measure the weight of water added to samples of the SAE RM-1 *Compatibility Fluid within* ±15 percent of the water added for additions up to 0.8 percent by weight, and within ±5 percent of the water added for additions greater than 0.8 percent by weight. The SAE RM-1 *Compatibility Fluid* used to prepare the samples must have an original ERBP of not less than 182°C. (360°F.) when tested in accordance with S6.1.

S7.3 Ethanol. 95 percent (190 proof) ethyl alcohol, USP or ACS, or Formula 3-A *Specially Denatured Alcohol* of the same concentration (see Part 212 of Title 26, *Code of Federal Regulations—U.S. Treasury Department,* I.R.S. Publication No. 368). For pre-test washings of equipment use approximately 90 percent ethyl alcohol, obtained by adding 5 parts of distilled water to 95 parts of ethanol.

S7.4 Measuring the hardness of SBR brake cups. Hardness measurements of SBR wheel cylinder cups and master cylinder primary cups shall be made by using the following apparatus and the following procedure.

S7.4.1 Apparatus.

(a) *Anvil.* A rubber anvil having a flat circular top 20±1 mm (13/16±1/16 inch) in diameter, a thickness of at least 9 mm (3/8 inch) and a hardness within 5 IRHD,s of the SBR test cup.

(b) *Hardness tester.* A hardness tester meeting the requirements for the standard instrument as described in ASTM D1415-68, *Standard Method of Test for International Hardness of Vulcanized Natural and Synthetic Rubbers,* and graduated directly in IRHD units.

S7.4.2 Procedure. Make hardness measurements at 23±2°C (73.4±3.6°F). Equilibrate the tester and anvils at this temperature prior to use. Center brake cups lip side down on an anvil of appropriate hardness. Following the manufacturer's operating instructions for the hardness tester, make one measurement at each of four points one-fourth inch from the center of the cup and spaced 90 degrees apart. Average the four values, and round off to the nearest IRHD.

S7.5 Sediment by centrifuging. The amount of sediment in the test fluid shall be determined by the following procedure.

S7.5.1 Apparatus.

(a) *Centrifuge tube.* Cone-shaped centrifuge tubes conforming to the dimensions given in Figure 6, and made of thoroughly annealed glass. The graduations shall be numbered as shown in Figure 6, and shall be clear and distinct. Scale-error tolerances and smallest graduations between various calibrations made with air-free water at 20°C (68°F).

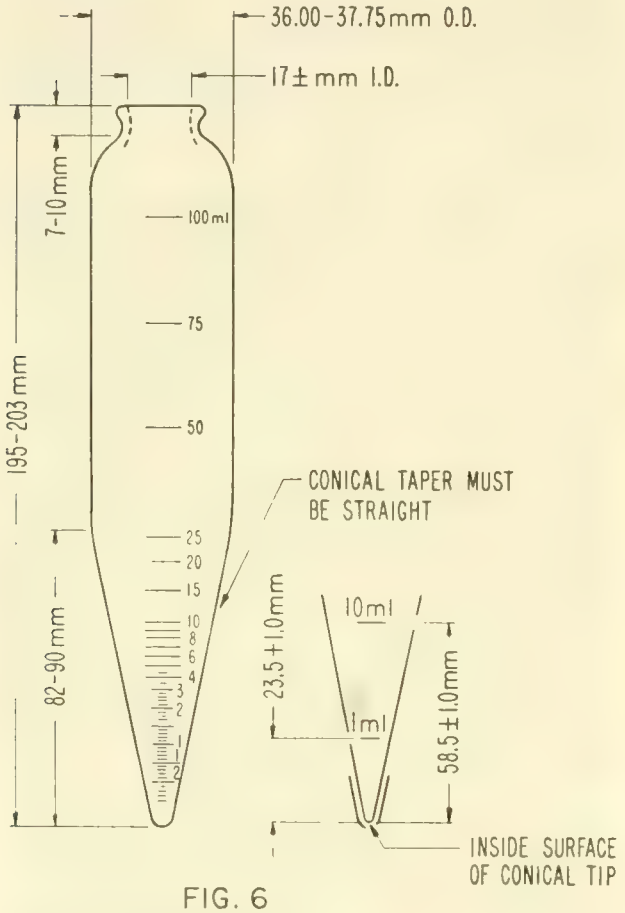


FIG. 6
ASTM 8-in CENTRIFUGE TUBE

TABLE V—Calibration Tolerances for 8-inch Centrifuge Tube

Range, ml	*Subdivision, ml*	*Volume Tolerance, ml*
0 to 0.1	0.05	±0.02
Above 0.1 to 0.3	0.05	±0.03
Above 0.3 to 0.5	0.05	±0.05
Above 0.5 to 1.0	0.10	±0.05
Above 1.0 to 2.0	0.10	±0.10
Above 2.0 to 3.0	0.20	±0.10
Above 3.0 to 5.0	0.5	±0.20
Above 5.0 to 10.0	1.0	±0.50
Above 10. to 25.	5.0	±1.00
Above 25. to 100.	25.	±1.00

(b) *Centrifuge.* A centrifuge capable of whirling two or more filled centrifuge tubes at a speed which can be controlled to give a relative centrifugal force (rcf) between 600 and 700 at the tip of the tubes. The revolving head, trunnion rings, and trunnion cups, including the rubber cushion, shall withstand the maximum centrifugal force capable of being delivered by the power source. The trunnion cups and cushions shall firmly support the tubes when the centrifuge is in motion. Calculate the speed of the rotating head using this equation:

$$\text{rpm} = 265\sqrt{\frac{\text{rcf}}{\text{d}}}$$

where: rcf = relative centrifugal force, and
d = diameter of swing, in inches, measured between tips of opposite tubes when in rotating position.

Table VI shows the relationship between diameter, swing, relative centrifugal force (rcf), and revolutions per minute.

S7.5.2 Procedure. Balance the corked centrifuge tubes with their respective trunnion caps in pairs by eight on a scale, according to the centrifuge manufacturer's instructions, and place them on opposite sides of the centrifuge head. Use a dummy assembly when one sample is tested. Then whirl them for 10 minutes, at a rate sufficient to produce a rcf between 600 and 700 at the tips of the whirling tubes. Repeat until the volume of sediment in each tube remains constant for three consecutive readings.

TABLE VI
Rotation Speeds for Centrifuges of Various Diameters

Diameter of swing, inches [a]	*Rpm at 600 rcf*	*Rpm at 700 rcf*
19	1490	1610
20	1450	1570
21	1420	1530
22	1390	1500

[a] Measured in inches between tips of opposite tubes when in rotating position.

S7.5.3 Calculation. Read the volume of the solid sediment at the bottom of the centrifuge tube and report the percent sediment by volume. Where replicate determinations are specified, report the average value.

S7.6 Standard styrene-butadiene rubber (SBR) brake cups. SBR brake cups for testing motor vehicle brake fluids shall be manufactured using the following formulation:

Formulation of Rubber Compound

Ingredient	*Parts by Weight*
SBR type 1503[a]	100
Oil furnace black (NBS 378)	40
Zinc oxide (NBS 370)	5
Sulfur (NBS 371)	0.25
Stearic Acid (NBS 372)	1
n-tertiary butyl-2-benzothiazole sulfanamide (NBS 384)	1
Symmetrical-dibetanaphthyl - p - phenylenediamine	1.5
Dicumyl peroxide (40 percent on precipitated $CaCO_3$)[b]	4.5
TOTAL	153.25

NOTE: The ingredients labeled (NBS_____) must have properties identical with those supplied by the National Bureau of Standards

[a] Philprene 1503 has been found suitable.

[b] Use only within 90 days of manufacture and store at temperature below 27°C (80°F).

Compounding, vulcanization, physical properties, size of the finished cups, and other details shall be as specified in Appendix B of SAE J1703b. The cups shall be used in testing brake fluids either within 6 months from date of manufacture when stored at room temperature below 30° (86°F) or within 36 months from date of manufacture when stored at temperatures below minus 15°C (+5°F). After removal of cups from refrigeration they shall be conditioned base down on a flat surface for at least 12 hours at room temperature in order to allow cups to reach their true configuration before measurement.

S7.7 Isopropanol. ACS or reagent grade.

36 F.R. 11987
June 24, 1971

PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 117

Retreaded Pneumatic Tires—Passenger Cars

(Docket No. 1–8)

Proposals to amend § 571.21 of Title 49, "Federal Motor Vehicle Safety Standards," to add a new standard on retreaded tires for use on passenger cars, were published October 14, 1967 (32 F.R. 14280), and March 5, 1970 (35 F.R. 4136). Prior to the latter notice, on April 10, 1969, a technical conference was held at which a discussion paper was offered for comments. Based upon this prior rulemaking activity, and after considering those comments received, a new motor vehicle safety standard is hereby issued that requires manufacturers of retreaded tires for passenger cars to comply with specified requirements.

The standard requires retreaded pneumatic tires for passenger cars to meet requirements for bead unseating, strength, endurance, and high speed performance identical to those specified for new pneumatic passenger car tires in Motor Vehicle Safety Standard No. 109, and to meet physical dimension and labeling requirements similar to the requirements of Standard No. 109. Many comments received in response to the notice of proposed rulemaking raised objections to these requirements. One objection was that the requirements make the retreader responsible for the performance of the casing as well as for his own retreading process. The casing is, however, one of the raw materials used in the retreading process. As such, the responsibility for the soundness of the casing can lie only with the retreader, as it is he who will determine that the casing is suitable for retreading purposes.

Some comments objected to the requirements because they believed them to be inappropriate for the retreaded tires. Their position was that Standard No. 109, in specifying requirements for new tires, took into account that new tires are designed to be used for more than one tread life. Consequently, it is argued, it is unreasonable to subject a retreaded tire, whose casing has already undergone use through at least one tread life, to the same performance criteria as a new tire. The purpose of Standard No. 109, however, is to provide the public with passenger car tires that will perform safely under modern driving conditions. These conditions are the same whether a new tire or a retreaded tire is involved, and call for the same performance requirements, as far as is practicable. In agreement with this result is the position of certain parties who recommended that requirements for new and retreaded tires be identical. Their position was that retreaded tires must meet the same minimum performance requirements as new tires in order to prevent them from being considered as unsafe, or as less safe, than new tires.

Many comments particularly objected to the proposed requirement that retreaded tires must meet the same physical dimension requirements as new tires. It is recognized that tires may shrink during the retreading process. A dimensional requirement for retreaded tires is necessary, however, to ensure that retreaded tires labeled a certain size are within a specified maximum tolerance of the size. Consequently, as there may be difficulty in requiring retreaded tires to meet the same physical dimension requirements as new tires, the standard as issued requires that the section width and the overall width of retreaded tires not exceed by more than 10 percent the figure provided as the section width in Appendix A of Standard No. 109. This is a slight relaxation of the proposed requirement, which specified a 7-percent tolerance.

Several objections were also raised to the proposed requirements for tire casings. These pro-

posals were that casings used in retreaded tires not have bead wire or cord fabric exposed either before or during the retreading process, that they not have a belt or ply removed during retreading, and that casings contain the labels on them by the original tire manufacturer pursuant to Standard No. 109. Many comments objected to the prohibition of retreading on casings having exposed cord fabric either before or during processing. The argument was presented that cord fabric exposed during the buffing part of the retreading process can be and often is repaired without affecting the service life or safety of the retreaded tire. As an alternative, some comments suggested that this requirement be changed to require that cord fabric not be "damaged." Once cord fabric has been exposed, however, it is far more likely to have been worn, exposed to moisture, or damaged in some other way. Furthermore, the suggested language would be nearly impossible to enforce, as any determination of "damage" would be largely subjective. Requiring that the fabric not be exposed, however, is a far less subjective test, and is consequently less subject to error. The proposed requirement has accordingly been retained.

Objections were also raised to the requirement that would prohibit the removal of a belt from a tire casing during processing. The argument presented was that belt removal, and the addition or replacement of a belt as well, should be allowed if the finished tire can meet the specified requirements. The agency has concluded, however, that belt removal, addition, and replacement raise questions concerning compatibility of materials and tire performance for which no data is presently available. Until such time as information is available on the effects on tire performance of belt removal, addition, or replacement, these practices will be prohibited in the manufacture of retreaded tires.

The proposed rule would have required retreaded tires to be labeled with the same information required on new pneumatic tires by Standard No. 109. The preamble to the notice indicated that this provision, requiring all original labeling to be on the casing and to be retained through the retreading process, would be accompanied by changes in the labeling requirements of Standard No. 109 that would require the original label to be placed in an area of the new tire sidewall where it would not be subject to destruction either during use or during retreading. As this amendment has not been made to Standard No. 109, the proposed labeling requirements are being modified. They require that each casing be one that has been labeled pursuant to S4.3 of Standard No. 109, but that the completed retreaded tire need only retain enough of the original label to display each item of required information in at least one location. The labeling requirements also provide that the retreaded tire be certified by labeling the tire with the symbol DOT, located on the tire as specified in Part 574, "Tire Identification and Record Keeping."

The notice of proposed rule making would have required retreaders to submit certain information to the agency, including a statement that records would be maintained by the retreader for a period of at least 3 years. These record keeping requirements involved records of materials used in the retreading process, records of process control, and records of performance tests and reported defects and failures. The purpose of these proposed requirements would have been to provide information to assist retreaders in ascertaining which tires might be suspect in the event of a finding of nonconformity or a safety-related defect. In consideration of comments received, the standard as now issued does not contain record keeping requirements, and record keeping by retreaders will be on a voluntary basis, consistently with the other standards. The NHTSA strongly recommends, however, that retreaders retain information on the materials and processes that they use, so that in the event of a defect or noncompliance they will be able to determine which tires are involved.

Similarly, the standard does not require retreaders to maintain records of performance tests or of reported defects and failures. Retreaders should be aware, however, that they are required to exercise due care in manufacturing retreaded tires to comply with this standard, and that information of this type is likely to be an important step in proving due care.

Effective date: January 1, 1972.

In consideration of the foregoing, § 571.21 of Title 49, Code of Federal Regulations, is amended by adding a new motor vehicle safety standard, No. 117, "Retreaded Pneumatic Tires: Passenger Cars" as set forth below.

Issued on April 14, 1971.

Douglas W. Toms,
Acting Administrator

36 F.R. 7315
April 17, 1971

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 117

Retreaded Pneumatic Tires

(Docket No. 1–8)

This notice is issued in response to petitions for reconsideration received concerning Motor Vehicle Safety Standard No. 117, "Retreated Pneumatic Tires," 49 CFR § 571.21, published April 17, 1971 (36 F.R. 7315).

Timely petitions were received from 8 parties; Bandag Incorporated, National Tire Dealers and Retreaders Association (by the firm of Sellers, Conner & Cuneo), The Mississippi Independent Tire Dealers Association, Alabama Tire Dealers and Retreaders Association, and The Louisiana Independent Tire Dealers Association, Owens-Corning Fiberglas Corp., American Retreaders Association, the Goodyear Tire and Rubber Company, the Rubber Manufacturers Association, and the B.F. Goodrich Tire Company. Certain other petitions were received more than thirty days after publication of the standard, and while they are petitions for rulemaking under the agency's procedural rules (49 CFR § 553.35) they have been considered in the issuance of this notice.

1. *Availability of casings.* Paragraph S5.2.3 of the standard requires that each retreaded tire be manufactured with a casing that has been labeled pursuant to S4.3 of Motor Vehicle Safety Standard No. 109. In effect, only casings from tires manufactured on or after August 1, 1968, have been required to have this information permanently labeled on the tire. According to many petitions, the period between August 1, 1968 and January 1, 1972, the standard's effective date, has been too short to allow the accumulation of a sufficient supply of casings that bear the required labeling. Many petitioners therefore requested that casings labeled pursuant to Standard No. 109 not be required until 1974 or 1975. These requests are denied. However, in order to make additional casings available the standard has been amended to allow, between January 1, 1972 and January 1, 1974, the use of some casings labeled with specific fractional markings that were first introduced in 1965. These casings are those for use on wheels having diameters of 14 or 15 inches, marked with the size designations 6.45, 6.85, 6.95, 7.35, 7.75, 8.15, 8.25, 8.45, 8.55, 8.85, 8.90, 9.00, or 915, and labeled with certain information as a result of the "Tire Advertising and Labeling Guides" which were adopted by the Federal Trade Commission on July 5, 1966. In situations where these casings are used, the retreader is required to label them further, in a permanent manner, with a maximum load rating and maximum permissible inflation pressure obtained from a table incorporated into the standard. Casings that contain the specified information, together with the maximum load rating and maximum permissible inflation pressure added by retreaders, will be labeled with most of the information required on new tires by Standard No. 109, and in accordane with Section 201 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1421). Manufacturers who use these older casings should be aware, however, that retreaded tires manufactured with them must meet the same perormance requirements as tires manufactured with casings that have been certified tobe in compliance with Standard No. 109.

2. *Application of the DOT certification mark.* Paragraph S6 of the standard requires the manufacturer to certify each retreaded tire by affixing to the tire the symbol DOT, as provided in section 574.5 of the Tire Identification and Recordkeeping regulations. The Administration takes the position that affixing the DOT before the effective date of the standard is inconsistent with the intent of the National Traffic and Motor

Vehicle Safety Act, as it is only with respect to tires manufactured after the effective date that certification has legal significance. At the same time, under the Act all retreaded tires manufactured on or after January 1, 1972, must contain the DOT mark. Certain petitioners have indicated that it would be impossible, without a substantial disruption of business, for no tire to have a permanently affixed DOT symbol on or before December 31, 1971, and for all tires manufactured on January 1, 1972, and thereafter to have such a symbol. To remedy this problem the standard is being amended to allow the use of a paper label containing prescribed language to serve as a valid certification from January 1, 1972, through February 29, 1972.

3. *Retention of labeling.* Certain petitions requested that paragraph S6.2, which requires certain labeling on the casing to be retained, be amended because the labeling information sometimes appears in an area on the tire that is subject to buffing. Consequently, it is argued, it is imossible to retain the information through the retreading process. These requests are denied. The required labeling is essential to the appropriate use of the tire and varies from casing to casing. It has been determined that the most satisfactory way to ensure that correct information of this type appears on the completed tire is for the casing manufacturer's labeling to be retained. Casings that cannot be retreaded without destruction of the labeling will consequently be unsatisfactory for use.

4. *Casing with exposed cord.* Many petitioners objected to the requirements of paragraph S5.2.1 that prohibit the retreading of casings that have cord fabric exposed before or during processing. The argument preented is that such tires can be retreaded as effectively and will provide the same level of performance as tires manufactured from casings on which cord fabric is not exposed, as long as cords that are exposed are not damaged. These requests are denied.

The NHTSA recognizes that under optimum conditions, careful buffing that barely exposes, but does not touch, the tire cords can produce satisfactory results. In practice, however, tire buffing is often not done by precision methods or highly trained personnel, especially in the case of smaller tire retraders. Any buffing that damages or removes part of the tire cords reduces the strength of the carcass at that point. Thus, buffing to the cord materially increases the possibility of producing unsafe tires.

Furthermore, exposing tire cords in the retreading process can cause the retreaded tire to be unsafe even if the cord is not damaged. In the manufacture of new tires, the cords that eventually make up the carcass are passed through complex adhesive solutions of resin and latex, before being dried and coated with rubber. Exposed cords in buffed retread carcasses generally do not receive comparable treatment to bond them to the overlaid rubber. Also, exposed carcass cords that are not promptly covered can absorb moisture from the air, which substantially weakens them.

Since the exposure of belts in belted tires does not carry with it the danger of impairment of carcass strength as does the exposure of ply cords, the standard is amended to make it clear that exposure of belt material during processing is allowed. Belt material may not, however, as specified in S5.2.1, be removed, added, or replaced. The petitions in this regard are denied for the reasons specified in the preamble to the standard published April 17, 1971.

5. *Physical dimension tolerances.* Several petitions noted that although retreaded tires may shrink during the retreading process, the physical dimension requirements of S5.1.2 allow only for a 10% tolerance over the maximum width to allow for service growth. An amendment to allow some shrinkage was requested. It has been determined that a minus 3% deviation from the specified section width is justified, and the standard is amended accordingly.

Effective date: January 1, 1972.

In the light of the above, Federal Motor Vehicle Safety Standard No. 117 in § 571.21 of Title 49, Code of Federal Regulations, is hereby amended. . . .

Issued on October 22, 1971.

Douglas W. Toms
Administrator

36 F.R. 20877
October 30, 1971

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 117

Retreaded Pneumatic Tires

(Docket 1–8; Notice 5)

The purpose of this notice is to amend Motor Vehicle Safety Standard No. 117, "Retreaded Pneumatic Tires" to increase the number of allowable casings that may be retreaded, to allow ply cord to be exposed in a limited, specified manner during the retreading process, and to modify the labeling requirements. Motor Vehicle Safety Standard No. 117 was issued April 17, 1971 (36 F.R. 7315), and amended, in response to petitions for reconsideration, on October 30, 1971 (36 F.R. 20877). Since that time certain segments of the industry have requested additional changes to the standard. This amendment is based on those requests.

1. One major objection that was raised concerns the prohibition against exposing cord in the ply area of the tire during processing. The issuance of April 17, 1971, prohibited any tire from being retreaded on which cord had been exposed either before or during the retreading process. The standard was further amended in the issuance of October 30, to allow belt material, but not ply cords, to be exposed during the retreading process.

The prohibition against retreading a casing that has exposed cord is based primarily on the fact that cord that has been exposed may have been damaged, thereby weakening the casing and increasing the chance that the completed tire will be unsafe. This is especially true where cord is exposed during the life of the original tire, as exposure of cord in this case will generally have been caused by excessive wear. However, cord has heretofore been exposed during the buffing part of many retreading processes, as a method of determining whether a sufficient amount of old tread rubber has been removed before the application of the new tread. The NHTSA recognizes the importance of removing a sufficient amount of old tread, and that, as stated in the October 30 notice, "careful buffing that barely exposes, but does not touch, the tire cords can produce satisfactory results." The Administration retained the prohibition against buffing to the cord, except for belt material, on the basis of the finding that it could result in damage to the cord and create unsafe tires.

After reviewing additional information and arguments that have been presented by interested parties, the NHTSA has now determined that buffing to the ply cord in very limited circumstances can be allowed without incurring the risk that cords will be damaged during buffing. The amendment issued herewith allows buffing during the retreading process only at a splice, that is, where two segments of the same ply overlap. Exposure of cord at this point will not materially affect casing strength, as there still will be one layer of unexposed cord at the splice due to the ply overlap. Exposure of ply cord at a location other than a splice remains prohibited.

2. The standard as issued April 17, 1971, allowed only casings that had been labeled pursuant to Motor Vehicle Safety Standard No. 109 (49 CFR § 571.109) to be used in the manufacture of retreaded tires. The categories of casings that could be retreaded under the standard were expanded in the amendment of October 30, 1971. Certain other additions, namely, the inclusion of certain 13-inch and 15-inch tire sizes and series 70 tires, each of which must contain certain labeling, are incorporated by this amendment.

3. In the preamble to the amendment of October 30, 1971, the NHTSA denied requests to amend the requirement that the original labeling on casings be retained on the completed retreaded tire, and that casings without retainable

labeling be discarded. The NHTSA's position was that retention of the original labeling was the most satisfactory way to ensure that each retreaded tire would be labeled with the appropriate safety information, and it was recognized that some casings would have to be rejected because of this requirement. Information which the agency has recently received, however, indicates that this requirement may reduce the number of retreadable casings to a degree not anticipated. The shortage of casings will result because the labeling on many casings lies in an area where it would be removed during the retreading process. Although the problem had been described in comments at previous stages of rulemaking, specific data as to the number of available casings was presented to the agency after the October 30 amendment.

The agency has concluded after review of this data that to require the discarding of casings without retainable labeling could substantially impair the industry due to a shortage of casings. The NHTSA has accordingly decided to revoke these requirements of the standard and to propose an alternate labeling scheme. A notice of proposed rulemaking to that effect is published in this issue of the *Federal Register*. Much of the difficulty experienced by retreaders in finding casings that bear labeling not subject to destruction results from the fact that many new tires carry their required information in locations such that it is removed during the retreading process. The NHTSA is therefore issuing an additional notice of proposed rulemaking which would amend Standard No. 109 to require the labeling in question to be placed in an area where it will not be subject to destruction during the retreading process.

This amendment to Standard No. 117 does not change the requirement that only certain casings containing original labeling information be used in the manufacture of retreaded tires, but specifies that, at present, this labeling need not be retained on the completed tire.

In light of the above, section 571.117 of Title 49, Code of Federal Regulations (Motor Vehicle Safety Standard No. 117) is hereby amended. . . .

Effective date: January 1, 1972. The amendments issued herein relieve restrictions and impose no additional burdens on any person. Accordingly, it is found, for good cause shown, that an effective date less than 180 days, and less than 30 days, from the day of issuance is in the public interest.

This notice is issued pursuant to sections 103, 112, 113, 114, 119, and 201 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1392, 1401, 1402, 1403, 1407, 1421) and the delegation of authority at 49 CFR 1.51.

Issued on December 21, 1971.

Douglas W. Toms
Administrator

36 F.R. 24814
December 23, 1971

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 117

Retreaded Pneumatic Tires

(Docket No. 1–8; Notice 7)

The purpose of this notice is to reissue, with certain amendments, Motor Vehicle Safety Standard No. 117, "Retreaded Pneumatic Tires." Standard No. 117 was published April 17, 1971 (36 F.R. 7315). In response to petitions for reconsideration, the standard was amended October 30, 1971 (36 F.R. 20877). As a result of additional evidence which was presented to the agency regarding the requirements for labeling of retreaded tires and other issues, the standard was amended again on December 23, 1971 (36 F.R. 24814). On the same day a notice of proposed rulemaking was also published proposing new labeling requirements (36 F.R. 24825). This notice is issued both in response to two petitions for reconsideration concerning the amendment of December 23, and to incorporate amendments based on the notice of proposed rulemaking of December 23.

The issues raised by the two petitions, one from the National Tire Dealers and Retreaders Association and the other from the Rubber Manufacturers Association, concern the availability of casings, casing labeling, and the physical dimension requirements of the standard. Requirements for labeling retreaded tires, which are related to the requirements for casing labeling, are dealt with below in the discussion of the amendments that are based on the notice of proposed rulemaking.

Availability of Casings. The petitions requested that additional casing sizes, namely 5.20, 6.40, 7.50, 8.00, 8.20, 8.50, 8.85, 9.50, 145, 155, 165, 175, 185, 195, and 205 be added to the list of usable casings. The request that sizes 5.20, 6.40, 7.50, 8.00, 8.20, 8.50, and 9.50 be added is denied. One purpose of Standard No. 117 is to limit usable casings to those manufactured within a limited period before the effective date of the standard. While these sizes were in fact manufactured during the period 1965–1967, unlike sizes presently allowed they were also manufactured in large numbers well before this period. It has not been demonstrated that these particular casing sizes are needed in order to ensure an adequate casing supply, and consequently they are not added to the list of usable casings. However, the remaining requested casing sizes, 8.85, 145, 155, 165, 175, 185, 195, and 205 are permitted to be used by this amendment as it appears that they were not in widespread use before the other sizes permitted to be used under the standard. In addition, the NHTSA has determined that some additional sizes, mostly radial sizes, may also be retreaded, and the proposed Table I has been amended accordingly and made part of the standard.

Casing labeling. As amended December 23, 1971, paragraph S5.2.4 of the standard required retreaded tires to be manufactured using casings that were either labeled in accordance with S4.3 of Standard No. 109, or until January 1, 1974, of certain enumerated sizes manufactured before the effective date of Standard 109. They were to be labeled with: (1) the generic name of the cord material used in the plies of the tire, (2) the actual number of plies, (3) the size of the tire, and (4) whether the tire is tubeless or tube type. The petitions have requested that casings not be required to contain this information.

The reason for requiring the casing, whether manufactured before or after the effective date of Standard 109, to contain the specified information is to provide information that retreaders can retain or carry over for the purpose of labeling retreaded tires. The only reliable source for much of this information is the casing.

The petitions have indicated, however, that not all of the information appears on many of the pre-Standard No. 109 casings, or appears in such a way that it cannot practicably be used for purposes of relabeling. The NHTSA has accordingly decided to modify the labeling requirements for pre-Standard No. 109 casings, and to make requirements for "DOT" casings consistent with them. As amended in this issuance, casings need only be labeled with (a) the tire's size designation, and (b) its actual number of plies or ply rating. Information obtained by NHTSA has indicated that almost all casing sizes allowed to be used by the standard had this information permanently labeled onto the tire sidewall.

The standard requires the casing to contain its original size marking. It also requires that the designated size of the retreaded tire be no larger (although it may be smaller) than the size of the original casing. Size is the chief criterion for consumers in the purchase of tires. The NHTSA has concluded that retreaded tires' sizes must be related to original casing markings in order to provide assurance that the correct size is placed on the retreaded tire, and that retreaders should not be allowed to determine casing size or the size of retreaded tires by any other means. Both petitions for reconsideration requested that this item of information not be required, and in this regard they are denied.

Casings are also required by this amendment to be labeled with either the tire's actual number of plies, or its ply rating. This modifies the proposed requirement that the "actual number of plies" appear. This information is also being required by today's amendment to appear on the retreaded tire. Ply rating is the basic criterion for determining the tire's maximum permissible inflation pressure and its maximum load. It is required to be on the casing because it cannot be determined with assurance except from the original tire marking. Some tires manufactured before the effective date of Standard No. 109 were not labeled with the actual number of plies, but of those that were not, almost all contained the ply rating. Consequently, requiring either actual number of plies or ply rating to be on casings will not reduce significantly the number of otherwise retreadable casings, and insofar as the petitions requested complete deletion of this requirement, they are denied.

The standard is amended as requested by the petitions to eliminate the requirement that the generic name of the cord material, and whether the tire is tubeless or tube-type, appear on the casing. It appears that industry practice before the effective date of Standard No. 109 varied in the manner that information of this type was labeled on new tires, and that requiring the information to be on the casing would unnecessarily restrict the types of usable casings.

Mention was made in the petitions of the possibility of information appearing on new tires being rubbed off in service, making casing labeling requirements difficult to meet. The NHTSA is of the opinion that, while this is a possible occurrence, complete obliteration of the labeling is unlikely. More important, however, is the fact that casings where the labeling does not appear should not, from a safety standpoint, be retreaded. The NHTSA has concluded that despite any consequent reduction in the number of casings, retreaders should not be left to their own devices in determining casing size and ply rating on completed tires, but that such information, for the safety of consumers, must be based on the casing's original markings.

Physical dimension requirements. The petitions have asked that the physical dimension requirements be amended to allow for a 3 percent minus deviation from the minimum size factor specified for the tire's size designation and type. The standard presently allows a plus 10 percent, and minus 3 percent deviation from the maximum section width only. The requests are based on the tendency of certain retreaded tires to shrink temporarily as a result of the retreading process.

These requests are denied. Data obtained from NHTSA tests indicate that the present requirements are being met, and that further relief is unnecessary. However, as a result of a comment received, paragraph S5.1.2 is being rewritten for purposes of clarity.

Labeling. The notice of proposed rulemaking published December 23, 1971 (36 F.R. 24825), specified a system by which retreaded tires would be required to be labeled with certain safety

information. The use of an affixed label would be allowed for a limited period following the standard's effective date, but after that period the information would be required to be permanently molded into or onto the tire sidewall. The final rule issued today adopts this system, with certain modifications in the information to be provided, resulting from the amendments to paragraph S5.2.4. The information is the same for both affixed and molded labeling, and consists of (a) the tire's size designation, (b) its maximum permissible inflation pressure, (c) its maximum load, (d) the actual number of plies, ply rating, or both, (e) the words "tubeless" or "tube type" as applicable, (f) the words "bias/belted" if the tire is of bias-belted construction, and (g) the word "radial" if the tire is of radial construction.

Size, maximum load, and maximum permissible inflation pressure are required because each is necessary for proper selection and use of passenger car tires. While the standard requires the size to be based on the original casing size, the values for maximum load and inflation pressure may, where necessary, be based on a table incorporated into the standard. The values in the table are based on the values for the tire's size designation and type as they appear in Standard No. 109 (§ 571.109), and are determined according to the tire's size and ply rating, both of which are required to be on the casing.

The words "bias/belted" and "radial" are required, where appropriate, in order to identify tires of different types of construction. There is presently a large body of opinion, supported by NHTSA, that mixing tires of differing construction types on the same vehicle or same axle of a vehicle is not in the best interests of safety. In the case of the requirement that the words "bias/belted" appear, while not proposed in the notice of December 23, the information would have been available if the proposed language, "actual number of plies in the sidewall and the actual number of plies in the tread area, if different," had been retained. The NHTSA does not believe labeling the words "bias/belted" will present significant problems for retreaders as most belted tires were manufactured after the effective date of Standard No. 109, and are consequently identified as such. Those that were not usually contained some similar identification. Moreover, it appears that after proper buffing, belted tires exhibit visible differences from pure bias construction.

The word "radial" is also being required, despite the fact that as proposed it would not have been required until permanent markings were required. At the time of the proposal, however, NHTSA was not aware that radial tires were being retreaded. It appears now that they are, and in the interests of safety the term "radial" is required to be added to all retreaded radial tires.

The words "tubeless" or "tube type" are also required to be labeled onto completed retreaded tires. Almost all of the comments considered this information to be safety related. Even though not required to appear on the casing, the information will be available to retreaders, as (1) most tubeless casings were in fact so marked, and (2) a tube-type tire, in most cases, can be identified by the lack of inner lining that is present on tubeless tires. In those cases where identification is not possible, the casing should not be retreaded, as this information would likewise be unknown at time of sale.

The proposed requirement that the tire be labeled with the generic name of its cord material is not retained. The comments have argued, and NHTSA agrees, that in the case of retreaded tires this information is not substantially related to safety. This, combined with the fact that it appears only on certain casings, where it must if it is to be relabeled, has convinced the NHTSA that at present the requirement should not be included in the standard.

Many comments opposed the requirement that labeling be molded into or onto the tire sidewall until such a time as new tire labeling was required to be placed in a position where it would not be buffed off during retreading, and could thus be retained through the retreading process. These comments argued that permanent labeling of this type proposed was unreasonably difficult to apply to retreaded tires because tires that would require different labeling are retreaded in the same matrix. This would require constant, time consuming changing of the matrix, and a resultant high possibility of error.

Tires, however, may be subject to many applications during their useful life. They are transferred from wheel to wheel, and from vehicle to vehicle, and each time this takes place the information on the tire sidewall becomes important. Permanent labeling is therefore required if the information is to perform its function, as it can be readily assumed that affixed labels will last little longer than the first time the tire is mounted. Affixed labels, as indicated in the preamble to the proposed rule of December 23, are to be permitted only because methods for permanent labeling are not immediately available to retreaders, and not as a viable substitute for permanent labeling. The NHTSA disagrees with industry claims that permanent labeling presents unreasonable technical problems. Methods for permanent labeling developed for compliance with the Tire Identification and Recordkeeping Regulations (49 CFR Part 574) can be readily adapted to meet these requirements. In fact, of all the information required in today's amendment, only the "size" and "maximum load rating" will vary to a significant amount from casing to casing. Each of the other items of required information can be applied uniformly to large groups of casings and need not be changed from tire to tire if proper sorting is done before retreading occurs.

In light of the above, Motor Vehicle Safety Standard No. 117, "Retreaded Pneumatic Tires," § 571.117 of Title 49, Code of Federal Regulations, is revised . . . .

Effective date: The standard's effective date of January 1, 1972, has been stayed as a result of court litigation, which is still pending. The NHTSA does not expect manufacturers to maintain a state of constant preparation so as to be able to comply with the standard as of the time the stay, should the court so decide, is lifted. It has determined, therefore, that additional leadtime will be necessary. Accordingly, the provisions of the standard, except those regarding labeling, shall become effective 30 days from the day the stay is lifted. The labeling requirements requiring the use of affixed labels shall become effective 90 days from that date, and those for permanent labeling, approximately one year from that date. Notice of exact dates will be published in the *Federal Register* at the time the stay is lifted.

This notice is issued pursuant to the authority of sections 103, 112, 113, 114, 119 and 201 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. §§ 1392, 1401, 1403, 1407, 1421); and the delegation of authority at 49 CFR 1.51.

Issued on March 17, 1972.

Douglas W. Toms
Administrator

37 F.R. 5950
March 23, 1972

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 117

Retreaded Pneumatic Tires

(Docket 1–8; Notice 9)

This notice revokes high speed and endurance requirements in Motor Vehice Safety Standard No. 117, "Retreaded Pneumatic Tires," in accordance with an order of the United States Court of Appeals for the Seventh Circuit in *H & H Tire Company* v. *Volpe*, No. 71–1935, 7th Cir., December 5, 1972. It also specifies effective dates for provisions of the standard subject to a stay that was entered by the court on December 31, 1971, and removed by its order.

In a notice published March 23, 1972 (37 F.R. 9590), the NHTSA indicated that it did not believe retreaders should be required to maintain a state of constant preparation, so as to be able to conform to the standard immediately following the lifting of the stay by the reviewing court. The NHTSA took this position although the stay had been imposed only 24 hours before the standard was to become effective, and retreaders should have by that time taken all necessary steps to achieve compliance. The notice accordingly specified that those requirements of the standard dealing with matters other than labeling would become effective approximately 30 days after the stay imposed by the court had been lifted. Requirements dealing with affixed labels (S6.3.1) were to become effective in 90 days, and requirements for permanent labeling (S6.3.2) in one year.

When these dates were projected, however, the NHTSA had assumed a decision would be rendered by the court in a short time. That assumption proved incorrect, and the NHTSA has determined that more leadtime than that specified on March 23, 1972, should be allowed. This leadtime will allow retreaders to use up their already acquired inventory of casings, and to obtain labels to conform to the affixed labeling requirements.

This notice provides, therefore, that provisions of the standard except those dealing with permanent labeling are effective 120 days from the day of publication. The permanent labeling requirements of the standard are effective one year from the day of publication. The NHTSA is of the opinion that 120 days is sufficient under the circumstances for retreaders to take whatever remaining steps are necessary to achieve conformity with these requirements.

In light of the above, Motor Vehicle Safety Standard No. 117, "Retreaded Pneumatic Tires", 49 CFR 571.117, is amended. . . .

Effective date: June 1, 1973, except for the provisions of paragraph S6.3.2, which are effective on February 1, 1974. The requirements of this standard were originally issued April 17, 1971, to become effective January 1, 1972. The standard in its present form was published March 23, 1972, but did not take effect due to a stay imposed on December 31, 1971. Accordingly, adequate lead time has already been provided for any long-range steps necessary for compliance. The public was notified of expected effective dates by the notice of March 23, 1972.

It is therefore found, for good cause shown, that an effective date less than 180 days from the date of publication of this notice is in the public interest.

(Sec. 103, 112, 113, 114, 119, 201, Pub. L. 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1402, 1403, 1407, 1421; delegation of authority at 49 CFR 1.51)

Issued on January 24, 1973.

Douglas W. Toms
Administrator

38 F.R. 2982
January 31, 1973

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 117

Retreaded Pneumatic Tires

(Docket No. 71–23; Notice 3)
(Docket No. 1–8; Notice 10)

This notice amends Motor Vehicle Safety Standards Nos. 109 and 117 (49 CFR 571.109) to reduce the minimum size of permanent safety labeling to 0.078 inches. Motor Vehicle Safety Standard No. 109, "New Pneumatic Tires," was amended November 4, 1972 (37 F.R. 23536), to specify both a location on the tire sidewall for safety labeling and a labeling size of not less than $\frac{3}{32}$ of an inch. Motor Vehicle Safety Standard No. 117, "Retreaded Pneumatic Tires", was amended March 23, 1972 (37 F.R. 9590), to specify permanent labeling of the same minimum size.

The Michelin Tire Company has protested that the $\frac{3}{32}$ inch minimum size is inconsistent with the existing practice of European tire manufacturers of labeling tires in letters having a size of 0.078 inches (2mm). It has pointed out that as a consequence of the amendment, European tire manufacturers will have to increase the size of all existing labeling. The NHTSA has concluded that the difference between letters 0.078 inches in size and those of 0.093 inches is not significant, and does not justify the resultant expense to manufacturers of modifying tire molds. By this notice the NHTSA therefore reduces the minimum size to 0.078 inches for labeling required by S4.3 of Standard No. 109.

Because the permanent labeling provisions of Standard No. 117 are intended to be ultimately met with new tire labeling, the size requirements for permanent labeling in that standard are also modified.

In light of the above, Motor Vehicle Safety Standard No. 109, 49 CFR 571.109, and Motor Vehicle Safety Standard No. 117, 49 CFR 571.117, are amended....

Effective dates: July 1, 1973, for the amendment to S4.3 of 49 CFR 571.109; February 1, 1974, for the amendment to S6.3.2 of 49 CFR 571.117. These amendments relieve an unnecessary restriction without a significant effect on motor vehicle safety. Consequently, it is found for good cause that notice and public procedure thereon are unnecessary, and that an effective date less than 180 days from the day of issuance is in the public interest.

(Secs. 103, 112, 113, 114, 119, 201, Pub. L. 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1402, 1403, 1407, 1421; delegations of authority at 49 CFR 1.51.)

Issued on March 8, 1973.

James E. Wilson
Acting Administrator

38 F.R. 6999
March 15, 1973

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 117

Retreaded Pneumatic Tires

(Docket No. 1–8; Notice 11)

This notice amends paragraph S6.2 of Standard No. 117, Retreaded Pneumatic Tires (49 CFR 571.117), to allow the temporary certification label permitted by that paragraph to be affixed to the sidewall of the tire, as well as to the tread. Federal Motor Vehicle Safety Standard No. 117 was published March 23, 1972 (37 F.R. 5950) and amended January 31, 1973 (38 F.R. 2982). Although the standard relating to the placement of a conformity label stated that the temporary label would be affixed "to the tread of the tire," the NHTSA did not intend to be restrictive of the label's location, and the limiting language was inadvertent.

Effective date: June 1, 1973. This amendment is corrective in nature and imposes no additional burden on any person. Accordingly, it is found that notice and public procedure thereon are unnecessary, and that good cause exists for an effective date less than 180 days from the day of publication.

(Secs. 103, 112, 113, 114, 119, 201, Pub. L. 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1402, 1403, 1407, 1421; delegation of authority at 49 CFR 1.51)

Issued on April 12, 1973.

James E. Wilson
Acting Administrator

38 F.R. 9668
April 19, 1973

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 117

Retreaded Pneumatic Tires

(Docket No. 1–8; Notice 14)

On August 21, 1973 (38 F.R. 22493), the NHTSA proposed to amend 49 CFR § 571.117 (Motor Vehicle Safety Standard No. 117, "Retreaded Pneumatic Tires") to revise retreaded tire physical dimension requirements, to facilitate the labeling of bias/belted tires, to specify acceptable methods of permanent labeling, and to reduce labeling size. Interested persons were given the opportunity to submit comments by September 24, 1973. Only three comments were submitted within the comment period, none of which objected to the substance of the proposed amendments. Accordingly, the proposed revision of paragraphs S5.1.2, S6.3.1, and S6.3.2 of 49 CFR § 571.117 is adopted without change as set forth below.

Effective date: The amendments to S5.1.2 and S6.3.1 are effective January 9, 1974. The amendment to S6.3.2 is effective February 1, 1974. These amendments facilitate compliance with the standard, relieve restrictions, and do not reduce the level of safety established by the standard. Accordingly, good cause exists and is hereby found for an effective date less than 30 days from publication.

(Secs. 103, 112, 113, 114, 119, 201 Pub. L. 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1402, 1403, 1407, 1421; delegations of authority at 49 CFR 1.51.)

Issued on January 3, 1974.

James B. Gregory
Administrator

39 F.R. 1443
January 9, 1974

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 117

Retreaded Pneumatic Tires

(Docket No. 1–8; Notice 15)

This notice and an accompanying notice of proposed rulemaking (39 F.R. 3571) are intended to implement the decision of the United States Court of Appeals for the District of Columbia in the *National Tire Dealers' and Retreaders' Association, Inc.*, v. *Brinegar* (Case No. 72–1753; decided January 8, 1974). Standard No. 117 was published in its present form on March 23, 1972 (37 F.R. 5950) and amended January 31, 1973 (38 F.R. 2982), March 15, 1973 (38 F.R. 6999), April 19, 1973 (38 F.R. 9668), May 3, 1973 (38 F.R. 10940), and January 9, 1974 (39 F.R. 1443).

Standard No. 117 would have required, effective February 1, 1974, that each retreaded tire be permanently labeled with each of the following items of information: the tire's size designation; the tire's maximum permissible inflation pressure, either as it appears on the casing or as set forth in Table 1 of the standard; the tire's maximum load, either as it appears on the casing or as set forth in Table 1; the actual number of plies, ply rating, or both; the word "tubeless", if the tire is a tubeless tire, or the words "tube-type" if the tire is a tube-type tire; the words "bias-belted", or the actual number of plies in the sidewall and the actual number of plies in the tread area, if the tire is of bias/belted construction; and the word "radial" if the tire is of radial construction. The Court's opinion vacates those parts of the permanent labeling requirements dealing with tire size, maximum inflation pressure, ply rating, tubeless or tube-type, and bias/belted and radial construction. It states that the standard should contain requirements for permanent labeling of the maximum permissible load, the actual number of plies, and the composition of the material used in the ply of the tire. This notice clarifies Standard No. 117 to require the maximum load to be permanently labeled onto each retreaded tire. As that requirement remains unchanged as a result of the Court's ruling, its effective date of February 1, 1974, is retained. Requirements for permanent labeling of the actual number of plies and the generic name of the cord material are not presently contained in the standard, and are accordingly proposed in a companion notice published on page 3571 of this issue of the Federal Register.

Under the language of Standard No. 117, the deletion of permanent labeling requirements results in a continuation of the existing requirement for affixed labeling in paragraph S6.3.1 with respect to the items of information deleted. Any information required to be labeled by paragraph S6.3.1 that is not permanently labeled onto the tire sidewall, i.e., either retained from the casing or relabeled on to the retreaded tire, must be included on a label, not easily removable, affixed to the tire sidewall.

In light of the above, paragraph S6.3.2 of 49 CFR 571.117 (Motor Vehicle Safety Standard No. 117) is revised. . . .

Effective date: February 1, 1974. This notice merely restates an effective date established January 31, 1973 (38 F.R. 2982).

(Sec. 103, 112, 113, 114, 119, Pub. L. 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1402, 1403, 1407, 1421; delegation of authority at 49 CFR 1.51.)

Issued on January 24, 1974.

James B. Gregory
Administrator

39 F.R. 3553
January 28, 1974

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 117

Retreaded Pneumatic Tires

(Docket No. 1–8; Notice 17)

This notice amends Motor Vehicle Safety Standard No. 117, *Retreaded Pneumatic Tires*, to require additional permanent labeling for retreaded tires. A notice of proposed rulemaking regarding this amendment was published January 28, 1974 (39 F.R. 3571).

The permanent labeling required to be on each retreaded tire by this notice is the actual number of plies in the tire's sidewall and the actual number of plies in its tread area (if different), and the generic name of each cord material used in the plies (both sidewall and tread area) of the tire. These requirements are in addition to the existing requirement that each retreaded tire be permanently labeled with its maximum permissible load.

Under the rule as hereby amended, retreaders do not have to relabel the ply and cord material information if it is retained on the casing sidewall through the retreading process. If the information is removed during processing, however, it must be relabeled so that it will be permanently affixed to the completed tire. If the information does not appear on the casing before retreading the casing may not be retreaded unless the retreader can otherwise determine the correct information.

The requirements for the permanent labeling of these information items are based specifically on section 201 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1421). The NHTSA did not include them in earlier versions of the standard, as it had concluded that their relationship to safety was not sufficient to justify permanent relabeling. In its opinion in *NTDRA* v. *Brinegar* 409 F.2d 31 (D.C. Cir., 1974), however, the Court of Appeals stated that under the Safety Act the NHTSA was unauthorized to reach this conclusion, since Congress had determined that permanent labeling requirements for actual number of plies and cord material must be included in the standard. The proposal of January 28, 1974, was issued as a direct result of that opinion.

Many industry comments suggested that the NHTSA implement this aspect of the opinion by requiring the information to appear on completed retreaded tires only when the information was retained through the retreading process. In cases where the information could not be retained, one comment, from the National Tire Dealers and Retreader's Association (NTDRA), suggested the use of affixed paper or plastic labels to supply the information, so it could be available to the purchaser at the time of purchase. Most of the comments, however, suggested that when the information could not be retained, no requirement should be imposed. These comments argued that for the agency to require otherwise would present substantial burdens on retreaders because of the difficulties in labeling all of the possible combinations of ply and cord material. The industry comments further pointed out that the permanent labeling problem will eventually disappear because of the amendment to Standard No. 109, which requires all tires manufactured after July 1, 1973, to contain required labeling between the tire's maximum section width and bead. This labeling can be retained through the retreading process.

After careful consideration of the issues presented, the NHTSA has determined that it must issue the requirements in the form described. The agency is not unmindful that this will prevent the retreading of some casings otherwise usable, and will require relabeling of the infor-

mation on others. The NHTSA believes that to issue the requirements in the form suggested by the industry comments would not be consistent with the requirements of Section 201 of the Safety Act as interpreted by the Court of Appeals in *NTDRA* v. *Brinegar*. To follow the industry suggestions would leave some tires without the information permanently labeled. It is impossible to reconcile this result with the statutory requirement as interpreted by the Court. Nor can the agency, in conformity with the statute, establish an effective date so far in the future as to provide sufficient time for tires not containing necessary labeling to enter the retreading process.

Based on its review of the record, the NHTSA does not find the requirement unreasonable or impracticable. Since the opinion in *NTDRA* v. *Brinegar*, methods have been developed which allow for the permanent labeling or relabeling of retreaded tires using a rubber medallion which is cured to the sidewall of the tire when the tire is in the mold. The comments indicate that this method is presently being used to permanently label not only a tire's maximum permissible load, as required, but its size, ply rating, and whether it is tubeless or tube type as well. The technology for this labeling approach has been fully documented in retreading journals, and in communications to the docket. The NHTSA has furnished opinions stating that the use of the medallion conforms to the standard's permanent labeling requirements. The docket contains clear information regarding the cost of medallion labeling. Each label costs the retreader some 2.5 cents, and the record demonstrates that the cost of both label and application should not exceed 10 cents per tire. This differs from representations previously made regarding permanent labeling costs, which had been represented at $2.50 per tire.

An additional problem raised in the comments is that adding the two information items greatly increases the labeling burden due to the number of possible combinations of information. The NHTSA does not believe the record supports this contention. According to NHTSA estimates, the variations in ply and cord material are relatively few in bias and bias-belted constructions, with only six possible combinations of ply and cord material in the case of bias tires and ten possible combinations in bias-belted construction. Together, these constructions would necessitate a maximum of 16 labels. While NHTSA estimates show a greater number of possible combinations in the case of radial tires, the record in this rulemaking suggests that few radial tires are as yet being retreaded. It appears most radials used for retreading will have been manufactured after July 1, 1973, and will have casings on which no relabeling would be needed.

Furthermore, one comment, which claimed an increase from 67 to 2,000 possible labels, presumed that all of the information (size, ply rating, maximum permissible inflation pressures, tubeless or tube type, as well as maximum permissible load, number of plies, and generic name of the cord materials) is placed on one label. However, there is nothing to prohibit the use of an additional label for both ply and cord material information, or even an additional label for each. Finally, relabeling is necessary only when the specified information is not retained through the retreading process. Estimates furnished by the industry and placed in the docket show that the information added by this amendment is not in a retainable position in only 1 out of 10 tires otherwise suitable for retreading. The requirement would presently affect a maximum of 10% of retreaded tires, and by the time of its effective date that percentage should decrease.

Prior to this amendment, Standard No. 117 required that on or after August 1, 1974, the only casings that could be used for retreading would be those that bore, originally molded into or onto their sidewalls, the symbol DOT, the tire size, and the actual number of plies or ply rating. The notice of proposed rulemaking of January 28, 1974, proposed to delete the ply-rating alternative, making it necessary to use only casings that show the actual number of plies. It also proposed to add a requirement that the casings to be used would be only those that had originally been labeled with the generic names of their cord materials. These casing requirements were proposed on the assumption

that the casing should already contain this information if it is to appear on the completed retreaded tire.

Several comments objected to these proposed requirements on the basis that they would cause a reduction in the number of retreadable casings in certain older and hard-to-find sizes. The NHTSA finds merit in these arguments, and the proposed requirements, that casings used for retreading must be only those that are originally labeled with their actual number of plies and their cord materials, are not adopted. Retreaded tires as they are finally produced must contain this information. But unlike "size" and "ply rating," which are crucial for safety and should only be based on original casing labeling, the NHTSA has decided that retreaders should be free to otherwise obtain information on the number of plies and cord materials and then place it permanently on the tire.

One objection raised in the comments with respect to the requirement that all casings bear the symbol DOT erroneously assumed that these requirements are part of the proposal. The requirement that on or after August 1, 1974, only DOT casings be retreaded was issued March 23, 1972 (37 F.R. 5950), because of the agency's concern over the continued use of older casings which were not manufactured to meet Standard No. 109. It was based on industry comments that a 6-year supply of casings was required to meet industry needs. August 1, 1974, is 6 years from the date that all new tires were required to be labeled with the specified safety information which is the source of both affixed and permanent labeling under this standard.

The existing casing requirements therefore remain unchanged: the only casings that may be used for retreading are those that bear original permanent labeling of the DOT symbol, size, and the actual number of plies or ply rating.

In light of the above, section 571.117 of Title 49, Code of Federal Regulations (Motor Vehicle Safety Standard No. 117), is amended . . . .

Effective date: May 12, 1975.

(Secs. 103, 112, 113, 114, 119, 201; Pub. L. 89–563; 80 Stat. 718 (15 U.S.C. 1392, 1401, 1402, 1403, 1407, 1421); delegation of authority at 49 CFR 1.51.)

Issued on November 6, 1974.

James B. Gregory
Administrator

39 F.R. 39882
November 12, 1974

MOTOR VEHICLE SAFETY STANDARD NO. 117

Retreaded Pneumatic Tires

(Docket No. 1-8; Notice 7)

S1. Scope. This standard specifies performance, labeling, and certification requirements for retreaded pneumatic passenger car tires.

S2. Purpose. The purpose of this standard is to require retreaded pneumatic passenger car tires to meet safety criteria similar to those for new pneumatic passenger car tires.

S3. Application. This standard applies to retreaded pneumatic tires for use on passenger cars manufactured after 1948.

S4. Definitions.

S4.1 "Casing" means a used tire to which additional tread may be attached for the purpose of retreading.

"Retreaded" means manufactured by a process in which a tread is attached to a casing.

S4.2 All terms defined in § 571.109 and § 571.110 are used as defined therein.

S5. Requirements.

S5.1 Retreaded tires.

S5.1.1 Except as specified in S5.1.3, each retreaded tire, when mounted on a test rim of the width specified for the tire's size designation in Appendix A of § 571.109, shall comply with the following requirements of § 571.109:

(a) S4.1 (Size and construction).

(b) S4.2.1 (General).

(c) S4.2.2.3 (Tubeless tire resistance to bead unseating).

(d) S4.2.2.4 (Tire strength).

S5.1.2 Except as specified in S5.1.3, each retreaded tire, when mounted on a test rim of the width specified for the tire's size designation in Appendix A of § 571.109, shall comply with the requirements of S4.2.2.2 of § 571.109, except that the tire's section width shall not be more than 110 percent of the section width specified, and the tire's size factor shall be at least 97 percent of the size factor specified, in Appendix A of § 571.109 for the tire's size designation.

S5.1.3 Each retreaded tire shall be capable of meeting the requirements of S5.1.1 and S5.1.2 when mounted on any rim in accordance with those sections.

S5.1.4 No retreaded tire shall have a size designation, recommended maximum load rating, or maximum permissible inflation pressure that is greater than that originally specified on the casing pursuant to S4.3 of § 571.109, or specified for the casing in Table I.

S5.2 Casings.

S5.2.1 No retreaded tire shall be manufactured with a casing—

(a) On which bead wire or cord fabric is exposed before processing.

(b) On which any cord fabric is exposed during processing, except that cord fabric that is located at a splice, i.e., where two or more segments of the same ply overlap, or cord fabric that is part of the belt material, may be exposed but shall not be penetrated or removed to any extent whatsoever.

S5.2.2 No retreaded tire shall be manufactured with a casing—

(a) From which a belt or ply, or part thereof, is removed during processing; or

(b) On which a belt or ply, or part thereof, is added or replaced during processing.

S5.2.3 Each retreaded tire shall be manufactured with a casing that bears, permanently molded at the time of its original manufacture into or onto the tire sidewall, each of the following:

(a) The symbol DOT;

(b) The size of the tire; and

(c) The actual number of plies or ply rating

S5.2.4 [Reserved]

S6. Certification and labeling.

S6.1 Except as specified in S6.2, each manufacturer of a retreaded tire shall certify that his product complies with this standard, pursuant to section 114 of the National Traffic and Motor Vehicle Safety Act of 1966, by labeling the tire with the symbol DOT in the location specified in § 574.5 of this chapter.

S6.2 From June 1, 1973 to July 31, 1973, a manufacturer may certify compliance by affixing to the tread or sidewall of the tire, in such a manner that it is not easily removable, a label that states in letters not less than three thirty-seconds of an inch high:

This retreaded tire was manufactured after June 1, 1973 and conforms to all applicable Federal motor vehicle safety standards.

S6.3 Labeling.

S6.3.1 Each retreaded pneumatic tire manufactured on or after June 1, 1973, shall be labeled, in at least one location on the tire sidewall in letters and numerals not less than 0.078 inches high, with the following information:

(a) The tire's size designation;

(b) The tire's maximum permissible inflation pressure, either as it appears on the casing or as set forth in Table I;

(c) The tire's maximum load, either as it appears on the casing or as set forth in Table I;

(d) The actual number of plies, ply rating, or both;

(e) The word "tubeless" if the tire is a tubeless tire, or the words "tube type" if the tire is a tube-type tire;

(f) If the tire is of bias/belted construction, the words "bias/belted", or the actual number of plies in the sidewall and the actual number of plies in the tread area.

(g) The word "radial" if the tire is of radial construction.

The information shall either be retained from the casing used in the manufacture of the tire, or may be labeled into or onto the tire during the retreading process, either permanently (through molding, branding, or other method that will produce a permanent label) or by the addition of a label that is not easily removable.

S6.3.2 Each retreaded tire manufactured on or after May 12, 1975, shall bear permanent labeling (through molding, branding, or other method that will produce a permanent label, or through the retention of original casing labeling) in at least one location on the tire sidewall, in letters and numbers not less than 0.078 inches high, consisting of the following information:

(a) The tire's maximum permissible load,

(b) The actual number of plies in the tire sidewall, and the actual number of plies in the tire tread area, if different; and

(c) The generic name of each cord material used in the plies (both sidewall and tread area) of the tire.

TABLE I—PLIES

Tire Size	2 Ply—4 Ply (4 Ply Rating)		4 Ply (6 Ply Rating)		4 Ply (8 Ply Rating)	
	Maximum Load	Maximum Inflation Pressure	Maximum Load	Maximum Inflation Pressure	Maximum Load	Maximum Inflation Pressure
6.00–13	1010	32	1080	36	1140	40
6.50–13	1150	32	1230	36	1300	40
7.00–13	1270	32	1360	36	1440	40
6.45–14	1120	32	1200	36	1270	40
6.95–14	1230	32	1310	36	1390	40
7.35–14	1360	32	1450	36	1540	40
7.75–14	1500	32	1600	36	1690	40
8.25–14	1620	32	1730	36	1830	40
8.55–14	1770	32	1890	36	2000	40
8.85–14	1860	32	1990	36	2100	40
5.60–15	970	32	1040	36	1105	40
5.90–15	1050	32	1130	36	1200	40
6.85–15	1230	32	1320	36	1390	40
7.35–15	1390	32	1480	36	1570	40
7.75–15	1490	32	1590	36	1690	40
8.85–15	1610	32	1720	36	1820	40
8.25–15	1620	32	1730	36	1830	40
8.45–15	1740	32	1860	36	1970	40
8.55–15	1770	32	1890	36	2000	40
8.85–15	1860	32	1980	36	2100	40
9.00–15	1900	32	2030	36	2150	40
9.15–15	1970	32	2100	36	2230	40
8.90–15	2210	32	2360	36	2500	40

TABLE I—PLIES—Continued

Tire Size	2 Ply—4 Ply (4 Ply Rating)		4 Ply (6 Ply Rating)		4 Ply (8 Ply Rating)	
	Maximum Load	Maximum Inflation Pressure	Maximum Load	Maximum Inflation Pressure	Maximum Load	Maximum Inflation Pressure
A70–13	1060	32	1130	36	1200	40
D70–13	1320	32	1410	36	1490	40
D70–14	1320	32	1410	36	1490	40
E70–14	1400	32	1490	36	1580	40
F70–14	1500	32	1610	36	1700	40
G70–14	1620	32	1730	36	1830	40
H70–14	1770	32	1890	36	2010	40
J70–14	1860	32	1980	36	2100	40
L70–14	1970	32	2100	36	2230	40
C70–15	1230	32	1320	36	1390	40
D70–15	1320	32	1410	36	1490	40
E70–15	1400	32	1490	36	1580	40
F70–15	1500	32	1610	36	1700	40
G70–15	1620	32	1730	36	1830	40
H70–15	1770	32	1890	36	2010	40
J70–15	1860	32	1980	36	2100	40
K70–15	1900	32	2030	36	2150	40
L70–15	1970	32	2100	36	2230	40

TABLE I—PLIES—Continued

Tire Size	2 Ply—4 Ply (4 Ply Rating)		4 Ply (6 Ply Rating)		4 Ply (8 Ply Rating)	
	Maximum Load	Maximum Inflation Pressure	Maximum Load	Maximum Inflation Pressure	Maximum Load	Maximum Inflation Pressure
165-13	1050	32	1130	36	1200	40
175-13	1150	32	1240	36	1350	40
185-13	1270	32	1390	36	1510	40
155R13	950	32	1015	36	1075	40
155R14	1010	32	1080	36	1140	40
155R15	1015	32	1085	36	1150	40
165R13	1010	32	1080	36	1140	40
165R14	1120	32	1200	36	1270	40
165R15	1130	32	1200	36	1270	40
175R14	1230	32	1310	36	1390	40
185R14	1360	32	1450	36	1540	40
185/70R13	1090	32	1140	36	1190	40
145-14*	865	32	905	36	935	40
145-15	895	32	940	36	975	40
195-15	1550	32	1680	36	1820	40
205-15	1700	32	1840	36	2000	40

* Dash Radial—Not an "R" Radial

36 F.R. 7315
April 17, 1971

PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 118

Power-Operated Window Systems for Passenger Cars and Multipurpose Passenger Vehicles

(Docket No. 69–11a)

In May 1968 the Director of the National Highway Safety Bureau issued a public advisory, stating that numerous cases of injury and death from accidental operation of power windows had been reported to the Bureau. He warned that many of those injuries and deaths had occurred because power windows could be closed when the ignition switch was off. In the advisory, the Director cautioned owners of vehicles with power-operated windows to have the wiring adjusted to prevent closure of the windows when the ignition switch is off.

It has been determined that the interests of motor vehicle safety require the imposition of a safety standard which will reduce, if not eliminate, the toll of deaths and injuries resulting from accidents involving power-operated windows.

A notice of proposed rule making relating to power-operated window systems in passenger cars and multipurpose passenger vehicles was published in the *Federal Register* on August 23, 1969 (34 F.R. 13608). Comments were requested concerning two objectives of the proposal: (1) To minimize the likelihood of personal injury or death occurring when a person is caught between a closing window and the frame, channel or seal, and (2) to insure that vehicle occupants can make emergency exits from vehicles equipped with power-operated windows in the event of a severe accident.

The comments received have been given careful consideration in the formulation of the safety standard issued today. To achieve the first major objective it was proposed that a power-operated window, once opened, not close when the ignition key of the vehicle is not in the "on" or "start" position. This proposal would have prohibited operation of windows when the key was in the "accessory" position, a position provided to avoid battery discharge and possible damage to the electrical system. The proposal would also have prohibited activation of power tailgate windows from the exterior of the vehicle. Several commenters objected that the proposal would in these respects prohibit widely accepted convenience features without corresponding safety benefits. These comments have been determined to have merit, and the standard as presently issued has been modified to require that a power-operated window system not be operative, except by muscular force or by operating an outside lock, when the key is removed from the ignition lock or is in an off position. This permits operation of windows with the key in the "accessory" position, as well as by a key-locking system on the exterior of the vehicle.

To achieve the second objective, it was proposed that a control be required that would open power-operated windows from inside the passenger compartment of the vehicle, regardless of the key position. Allowance of such a control, however, might tend to defeat the first major objective, and also make it easier for thieves to enter a locked vehicle. Further, an accident severe enough to jam a vehicle door very likely would be severe enough to jam the window in its channel or to interfere with the power source for emergency operation of the window. For these reasons this proposal has not been adopted in Standard No. 118. The standard does, however, permit installation of master control switches for overriding control of power-operated windows when the ignition key is in a position other than off.

Comments indicated an assumption that power-operated interior partitions were covered, as they were intended to be, though not specifically mentioned in the preamble of the proposal. To insure that there is no ambiguity on the point, Standard No. 118 includes partitions in the requirements.

The subject matter covered by this rulemaking action is being adopted at this time because it has been determined that it is feasible and that it can be implemented at an early date. The notice of proposed rule making upon which this rulemaking action is based was issued in conjunction with an advance notice of proposed rule making (34 F.R. 13609, Aug. 23, 1969) on power-operated window systems that dealt with the subject of mechanisms that would interrupt, stop, or reverse the direction of the window when a predetermined force is exerted on an object between the glazing and the frame, channel, or seal upon which it closes, and other fail-safe considerations. The advance notice involved engineering and economic problems of a substantial magnitude. Those problems and their solutions are undergoing further study and will be given consideration for rulemaking based on the results thereof.

In consideration of the foregoing, 49 CFR 571.21, Federal Motor Vehicle Safety Standards, is amended by adding Standard No. 118, Power-Operated Window Systems....

Effective date: February 1, 1971.

Issued on July 17, 1970.

Douglas W. Toms,
Director,
National Highway Safety Bureau

35 F.R. 11797
July 23, 1970

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 118

Power-Operated Window Systems

(Docket No. 74–1; Notice 3)

The purpose of this notice is to amend Standard No. 118, *Power-Operated Window Systems*, 49 CFR 571.118, to permit the operation of power windows under certain conditions when the ignition is not in the "on" position.

On September 23, 1974, the agency published a notice (39 F.R. 34062) proposing to allow the operation of power windows, when the key that controls the vehicle's engine is in the off position or is removed from the lock, only in circumstances where (1) only muscular force is used, or (2) a key-locking system on the vehicle's exterior is activated, or (3) a door that has no frame meeting the upper edge of the closed window is opened a specified amount and a switch separate from the normal power window switch is activated.

Nine comments were submitted to the docket, all of which approved of the basic proposal to allow operation of the power windows when the vehicle engine is not running. General Motors, who suggested the proposal as it was published, supported its adoption. However, most of the commenters objected to the proposed provision that a separate switch be required to operate a window when the door is open to a degree sufficient to permit a ball the size of a child's head to pass between the top edge of the fully closed window and the vehicle's roof rail. The objection was based on a contention that the separate switch provision was design restrictive and not necessary from a safety standpoint. According to the comments, required use of a separate switch for activation of the windows when the doors are opened would not assure a higher level of safety than use of the normal power activation switch.

The NHTSA finds merit in commenters arguments. It is the considered opinion of the agency that the absence of a separate switch requirement will have no effect on the safety of the power-operated window system since no switch would be capable of activation unless the vehicle's door were opened to the specified distance. For this reason the proposed separate switch requirement is deleted. Manufacturers will thus be free to install whatever type of activation system they wish, as long as the criteria of S3(c) are satisfied.

In addition, the description of the locations between which the test ball must fit appears to need clarification. It is the agency's intention that the ball be capable of passing between the upper rear corner of the fully closed window and the vehicle's roof rail. Therefore, the term "trailing edge" in S3(c) is changed to "upper rear corner."

In consideration of the foregoing, S3. of Standard No. 118, *Power-Operated Window Systems* (49 CFR 571.118) is amended. . . .

Effective date: Because this amendment relieves a restriction and imposes no additional burden on any person, it is found for good cause shown that an immediate effective date is in the public interest.

(Secs. 103, 119, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

Issued: July 23, 1975.

James B. Gregory
Administrator

40 F.R. 31773
July 29, 1975

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 118

Power-Operated Window Systems

[Docket No. 82-07; Notice 2]

ACTION: Final Rule.

SUMMARY: This notice amends Federal Motor Vehicle Safety Standard (FMVSS) No. 118, *Power-Operated Window Systems,* to permit the operation of a vehicle's power windows and partitions during the interval between the shutting off of the engine and the opening of a front door on the vehicle. This amendment, which was proposed in response to a petition from General Motors Corporation (GM), would permit the manufacturers to offer power window systems which are more convenient than current systems. The agency believes the amendment would increase design flexibility without adversely affecting safety.

DATES: This amendment is effective on May 5, 1983.

SUPPLEMENTARY INFORMATION: In 1970, NHTSA issued FMVSS 118 in response to numerous cases of injury and death resulting from accidental operation of power windows. The standard sought to address the main source of these accidents, the unsupervised use of power windows by children, which could result in the child being caught between the closing window or partition and the window or partition frame.

The standard provides that power-operated window and partition systems may be operable only in certain specified circumstances. First, operation is permitted when the vehicle's ignition switch is in the "ON," "START," or "ACCESSORY" position. The rationale for permitting operation in that situation is that the driver would presumably still be in the vehicle to supervise the operation of the windows by any children who are passengers. Second, the standard permits operation of the systems by "muscular force." Third, the systems may also be operated by a key-locking system on the exterior of the vehicle. Here again, the driver would presumably be able to observe the window or partition being closed to assure that the closing track is clear. Fourth, the standard permitted operation of the systems when the key is in the "off" position or removed from the vehicle and the door is opened a specified amount. This provision, which applies only to vehicles having doors with no frame meeting the upper edge of the closed window, was added to the standard in 1975 in response to a petition from GM. However, neither GM nor any other manufacturer ever produced the system which this provision was intended to permit, and it appears that no manufacturer plans to offer such a system in the future.

On April 1, 1982, in 47 FR 13845, the agency proposed to permit operation of power windows and partitions in a fifth circumstance, in response to another petition from GM. Under this proposal, these systems would be operable during the interval between the time the vehicle's ignition key is shut off to the time one of the vehicle's doors is opened. This provision would permit windows to be operable in situations such as refueling stops at service stations, an added convenience for the driver. However, it would also assure, except in rare circumstances that the driver is still in the vehicle and able to supervise the operation of the windows. The provision was proposed as a method of increasing driver convenience and was anticipated to have no impact on safety.

The agency received 28 comments on the proposal. Comments from the vehicle manufacturers favored the proposal, with some having proposals

for slight refinements of the proposed regulatory language. Comments were also received from a number of individuals, most of whom opposed the amendment. After careful consideration of these comments, the agency has determined to promulgate the proposed amendment.

The individuals who opposed the proposed amendment generally argued that the change would permit the operation of power windows by unsupervised children and therefore would be a detriment to safety. Based on the agency's review of the comments and conversations with several of these individuals, it appears that they were unaware that the window systems would cease being operational as soon as the engine is shut off and a door is opened and would remain nonoperational even if the door were again closed. Thus, the proposal would tend to assure that the driver is in the car when the windows can move. Once this aspect of the proposal was explained to the individuals, they no longer opposed the amendment.

While there is a possibility under the new option for power windows to be operational without the driver being present in the vehicle, that possibility could arise only in rare circumstances. Further, similar possibilities exist under one of the existing options. For example, under the new option, a driver could get out of a vehicle, leaving the engine running and close the door. The windows would still be operational. Then, if the driver's window were open so that he or she could reach through the open window instead of opening the door to shut the engine off, the windows would continue to be operational. Similarly, under one of the current options, power windows would be operable in the same circumstances, at least until the driver reached into the vehicle and shut of the engine. The agency believes that these circumstances would rarely occur and would be even less likely to occur when children were in the car. Accordingly, the agency believes that this potential detriment would, if it occurs at all, be very small. Even if it does occur, it could be offset by a small benefit suggested by other commenters. They felt that the amendment would provide a security advantage, by permitting drivers to quickly close the vehicle's windows for protection without first having to turn on the ignition switch. Overall, the agency does not anticipate that the proposal would result in any increase in injuries or deaths.

Several manufacturers argued for certain modifications to the proposed rule. Mercedes-Benz argued that the interval after engine shut-off during which the windows are operable should end when one of the *front* doors is opened. American Motors made a similar suggestion. The agency agrees that, in the case of four door automobiles, it is unlikely that the driver would exit from one of the rear doors and entry to or exit from rear seats should not impede the ability of the driver to supervise children in the vehicle. Therefore, the agency has adopted this suggestion.

Fiat Motors suggested that the agency permit the use of systems incorporating a 20 second time delay, i.e., windows would be operable for 20 seconds after the engine is shut off regardless of whether a door had been opened. Such a system could provide a brief interval during which children in a vehicle would be unsupervised and the power window system would be operational, possibly increasing the risk of the types of accidents FMVSS 118 was designed to prevent. The agency believes, on the basis of current information, that adoption of the proposal is not appropriate. If Fiat or any other commenter wishes to present data or arguments with regard to the safety impacts of such a system, the agency will reconsider permitting the use of this type of system.

American Motors Corporation (AM) also suggested several clarifications to the proposed rule. First, AM suggested that the rule explicitly state that power window and partition systems may be operable when the ignition switch is in the "ACCESSORY" position after a door is opened. Since the standard always permitted systems to be operable whenever the ignition key is in the "ACCESSORY" position, no substantive change would be involved. The agency has attempted to clarify this point. AM further suggested that references in the standard to the "key that controls activation of the vehicle's engine" be replaced by "ignition switch." However, the standard would apply to any systems used in electric vehicles or other motor vehicles which operate by energy produced by means other than ignition. Therefore, the latter suggestion has not been adopted.

AM also favored the deletion of the provision permitting the operation of power windows in certain vehicles when a door is opened a specified amount, since that provision never has and likely never would be used. Since this provision is apparently obsolete, it has been deleted.

The agency is making this amendment effective immediately upon publication, since the amend-

ment "relieves a restriction" within the meaning of 5 U.S.C. 553(d)(1), by permitting the use of certain systems which were previously unauthorized. The agency also finds that making this amendment effective immediately is in the public interest, in accordance with section 103(e) of the National Traffic and Motor Vehicle Safety Act, since doing so will permit the use of more convenient power window systems at an early date. Also, since the amendment relieves a restriction in FMVSS 118, providing 180 days lead time is unnecessary.

NHTSA has determined that this proceeding does not involve a "major rule" within the meaning of section 1, paragraph (b), of Executive Order 12291 because it is not likely to have an effect on the economy of $100 million or more, to result in a major increase in costs or prices, or to have a significant adverse effect on competition, employment, investment, productivity, innovation, or the ability of United States firms to meet foreign competition. Similarly, this action is not deemed "significant" for purposes of Department of Transportation procedures for internal review of regulatory actions. The economic impacts of this Amendment are so minimal as to not warrant preparation of a full regulatory evaluation, since the amendment merely permits the use of certain systems which were previously prohibited.

Pursuant to the Regulatory Flexibility Act, the agency has considered the impact of this rulemaking action on small entities. I certify that this action will not have a significant economic impact on a substantial number of small entities, including small organizations or governmental units. Therefore, a regulatory flexibility analysis is not required for this action. The agency has concluded that few, if any, manufacturers of power window systems are small entities and that the impacts of this rule on those companies which decide to take advantage of the new alternative method of compliance should be minimal. There would be no significant impact on the cost of new vehicles manufactured in accordance with the new provision. Therefore, there should be no significant impact on small entities which purchase vehicles with power windows.

In consideration of the foregoing, 49 § 571.118 is amended as follows:

1. Section 3 is revised to read as follows:

S3. Power window or partition systems may be operable only in the following circumstances.

(a) When the key that controls activation of the vehicle's engine is in the "ON", "START", or "ACCESSORY" position;

(b) By muscular force unassisted by a vehicle power source;

(c) Upon activation by a key-locking system on the exterior of the vehicle; or

(d) During the interval between the time a running engine is turned off and the opening of either of a two-door vehicle's doors or, in the case of a vehicle with more than two doors, the opening of either of its front doors.

Issued on April 29, 1983

Raymond A. Peck, Jr.,
Administrator

48 F.R. 20237
May 5, 1983

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 118

Power-Operated Window Systems

[Docket No. 82-07; Notice 3]

ACTION: Final rule, response to petition for reconsideration.

SUMMARY: This notice responds to a petition for reconsideration filed by General Motors Corporation with regard to the agency's recently issued rule amending Federal Motor Vehicle Safety Standard (FMVSS) No. 118, *Power-Operated Window Systems.* GM requested that the agency clarify the language of this amendment, which permits operation of power windows during the interval between the shutting off of a vehicle engine and the opening of a door. NHTSA agrees that the clarification suggested by GM is consistent with the agency's intent in originally amending the standard, and the agency is therefore further amending the standard accordingly.

EFFECTIVE DATE: October 14, 1983.

SUPPLEMENTARY INFORMATION: On May 5, 1983, NHTSA published a final rule amending FMVSS 118 (49 CFR 571.118), in response to a rulemaking petition filed by General Motors Corporation. The GM petition requested that the standard be amended to permit operation of power windows during the interval between the shutting off of a "running engine" and the opening of the vehicle's front doors. GM sought this amendment to permit it to offer power window systems which GM believes are more convenient to use. Prior to this amendment, vehicles had to be designed so that a driver who shut his or her vehicle's engine off but remained in the vehicle would have to turn the vehicle ignition back to the "ON" or "ACCESSORY" position in order to operate the windows.

FMVSS 118 was originally issued to prevent injuries resulting from automative power windows closing on small children. Prior to the issuance of that standard, such injuries most often occurred when children operated the windows without the driver present. The standard seeks to minimize the likelihood of this unsupervised operation of the windows by requiring that operation of the windows be controlled by a key, typically the ignition key. This requirement assures, in most instances, that the driver is present in the vehicle when power windows are operable.

The GM petition was found by the agency to be consistent with this concept of positive key control of power window operation. Between the time a running engine is shut off and the opening of a front door, the driver of the vehicle would in all likelihood still be in the vehicle and able to assure that children in the vehicle were not playing with the windows. Therefore, the agency granted the GM rulemaking petition and amended FMVSS 118 to permit window operation during that time interval. See 48 FR 20237, May 5, 1983.

On June 3, 1983, GM requested that the agency clarify the langauge adopted in the May 5th amendment, either by issuing an interpretation concerning the specified language or by amending the language. The problem pointed out by GM is that most power window systems do not actually sense whether an engine is running. Instead, they sense the position of the ignition locking device, which usually correlates very closely with the operation or nonoperation of the engine. Thus, for example, in a system designed to comply with the amended standard by sensing the key position, if the ignition key were turned to the "ON" position and then the "OFF" position, the power windows would remain operable until a front door opened. However, strictly speaking, this hypothetical situation might not involve turning off a "running engine" (for example, when the engine stalls). Therefore, such a system could be considered in violation of the standard.

The agency agrees with GM that there is no significant safety-related difference between window systems which sense key position and those which sense engine operation. The important consideration from the agency's perspective is the assurance that the driver is likely to be present in the vehicle to supervise operation of the power windows. These two possible system designs appear to provide equal assurance that the driver is present. Requiring that the power window system sense engine operation in addition to key position would, on the other hand, add substantially to the cost of such systems. Therefore, NHTSA is herein amending FMVSS 118 to clarify the time interval during which power window operation is permissible, consistent with the GM request. This action is being taken in the form of an amendment to the standard rather than as an interpretation, to provide the clearest public notice of the requirements of FMVSS 118. This amendment is consistent with the original intent of the May 5th amendment.

The agency is making this amendment effective immediately upon publication since the amendment merely clarifies an existing provision of FMVSS 118. The agency finds that making this amendment effective immediately is in the public interest in accordance with Section 103(e) of the National Traffic and Motor Vehicle Safety Act, because the amendment will facilitate the use of more convenient power window systems at an early date. Also, since the amendment does not add any substantive requirements to FMVSS 118, providing 180 days lead time is unnecessary.

NHTSA has determined that this proceeding does not qualify as a "major rule" within the meaning of section 1, paragraph (b), of Executive Order 12291 because it is not likely to have an effect on the economy of $100 million or more, to result in a major increase in costs or prices, or to have a signficant adverse effect on competition, employment, investment, productivity, innovation, or the ability of the United States firms to meet foreign competition. Similarly, this action is not deemed "significant" for purposes of Department of Transportation procedures for internal review of regulatory actions. The economic impacts of this amendment are so minimal as to not warrant preparation of a full regulatory evaluation, since the amendment merely clarifies regulatory language permitting the use of certain systems which were prohibited prior to May 5, 1983.

Pursuant prior to the Regulatory Flexibility Act, the agency has considered the impact of this rulemaking action on small entities. I certify that this action will not have a significant economic impact on a substantial number of small entities, including small organizations or governmental units. Therefore, a regulatory flexibility analysis is not required for this action. The agency has concluded that few, if any, manufacturers of power window systems are small entities, and that the impacts of this rule on any manufacturer should be minimal. There would be no significant impact on the cost of new vehicles manufactured in accordance with the new provision. Therefore, there should be no significant impact on small entities which purchase vehicles with power windows.

In consideration of the foregoing, 49 CFR 571.118 is amended as follows:

1. Section 3(d) is revised to read as follows:

(d) During the interval between the time the locking device which controls the activation of the vehicle's engine is turned off and the opening of either of a two-door vehicle's doors or, in the case of a vehicle with more than two doors, the opening of either of its front doors.

Issued on October 7, 1983.

Diane K. Steed
Deputy Administrator

48 FR 46793
October 14, 1983

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 118

Power-Operated Window Systems (Docket No. 87-10; Notice 2)

ACTION: Final Rule

SUMMARY: This final rule amends Standard No. 118 *Power-Operated Window Systems,* to extend the Standard's applicability to light trucks. The agency concludes that power windows in light trucks present the same risk of injury to vehicle occupants as power windows in vehicle types already subject to the Standard. This rule also narrows the restrictions on the operation of power windows so that these restrictions no longer apply to the opening of power windows. NHTSA is making this change because the only significant risk of injury by a moving power window occurs during the *closing* of such a window.

In the notice proposing to amend Standard 118, NHTSA also considered a number of proposals: extending the standard's requirements to power-operated sunroofs; and either permitting external non-key locking systems to operate power windows and sunroofs, or prohibiting all external operating systems. For the reasons stated in the preamble to this final rule, the agency is reserving judgment on these issues, and will address them further in a subsequent notice of proposed rulemaking.

DATES: Paragraph S2, extending the application of Standard 118 to light trucks, is effective December 21, 1988. Paragraph S3, limiting Standard 118 requirements to *closing* a power-operated window or partition, is effective July 25, 1988.

SUPPLEMENTARY INFORMATION: *Introduction.* On October 16, 1987, NHTSA published a notice of proposed rulemaking (NPRM) proposing several changes to Standard No. 118, *Power-Operated Window Systems* (49 CFR 571.118). (52 FR 38488, October 16, 1987.) First, the agency proposed to include light trucks (less than 10,000 lbs. gross vehicle weight rating or "GVWR") among the vehicle classes to which the Standard applies. The principal examples of these vehicles are pickup trucks and cargo vans. The agency noted that light truck owners frequently use these vehicles to transport passengers, including small children. NHTSA tentatively concluded that power-operated window systems in light trucks should offer the same protection as power window systems installed in other vehicles commonly used to transport passengers.

Second, the agency proposed to amend the introductory portion of subparagraph S3 of Standard 118 to make its requirements regarding the operation of power windows apply only to *closing* a power window (rather than to any circumstance where the window is "operable"), because injury during unsupervised power window operations is likely to occur only when a closing power window catches an occupant's head or other body part between the closing window and the door frame. NHTSA stated that opening a power window seemed unlikely to cause adverse safety consequences.

Third, the agency proposed either revising or eliminating paragraph S3(c). The proposed revision was to reduce the restrictions on the type of external mechanism that could be used for operating a power window by replacing the term "key-locking system" in subparagraph S3(c) with the less restrictive term "locking system." NHTSA stated that the term "key-locking system" excludes nontraditional, keyless locking systems that permit a person to control entry and other aspects of vehicle operation externally through punching numeric or alpha numeric codes on a touchpad control. In the interest of facilitating technological innovation, the agency proposed adopting the broader term provided that this action would have no adverse safety consequences.

In the alternative, the agency addressed the question whether to eliminate subparagraph S3(c) entirely, doing way with any external controls for *closing* a power-operated window. NHTSA had received reports of a small number of incidents alleging that children were harmed when a child inside the vehicle reached out and operated the key-locking mechanism, or when a person outside the vehicle inadvertently raised a power-operated window.

Fourth, the agency proposed to expand Standard 118 to include power-operated sunroofs. The agency tentatively concluded that operating a sunroof presented the same risk of injury to small children as operating traditional power windows and partitions. While it appeared that most manufacturers installed

power sunroofs that met Standard 118 requirements, NHTSA sought to eliminate the risk of a manufacturer's installing a power sunroof or similar device that does not provide protection for the technical reason that the device is neither a "window" nor "partition."

Commenters. The agency received 18 comments on these proposed changes. Ten commenters were motor vehicle manufacturers: Austin Rover Group, Ltd. (ARG); BMW of North America (BMW); Chrysler Motors Corporation (Chrysler); Fiat; Ford Motor Company (Ford); General Motors Corporation (GM); Jaguar; Land Rover Ltd. (Land Rover); Toyota Motor Corporation (Toyota); and Volkswagen of North America (VWoA). The National Automobile Dealer's Association (NADA), the Injury Prevention Resource and Research Center (IPRRC), and six individuals also commented. NADA and IPRRC endorsed the proposed amendments without further comment. Two individuals raised matters that were beyond the scope of the notice.

Extending the Standard to Light Trucks. Chrysler, Ford, Land Rover, GM, Toyota, and Fiat all supported this part of the proposal. Chrysler and GM stated that power window systems in their light duty trucks already comply with Standard 118. Ford stated that it "generally concurred" in the agency's (NPRM) rationale, but made no further comment.

VWoA suggested that the agency document the safety need for expanded coverage. The agency believes that there already is sufficient justification for extending the Standard to light trucks. As the NPRM stated, light trucks commonly are used for passenger transport, including transporting small children. The rationale for Standard 118 is to minimize the risk of injury to children from unsupervised power window operation. This safety rationale applies to all vehicles commonly used for passenger transport.

One individual commenter, Mr. Charles B. Jones, suggested that the agency also extend the Standard to include vans. The Standard already applies to passenger vans, which fall in the category of multipurpose passenger vehicles. The multipurpose passenger vehicle (MPV) class consists of vehicles constructed on a truck chassis, or constructed with special features for occasional off-road operation, and which have a designed seating capacity of 10 or less than 10 persons. When this final rule becomes effective, the Standard will also apply to cargo vans, which are classified as trucks.

Other individuals whose comments were within the scope of the notice either did not address this issue, or endorsed this part of the proposal without comment.

For the preceding reasons, and for the reasons set out in the NPRM, NHTSA is amending Standard 118 by including light trucks among the vehicle classes to which the Standard applies.

Applying the Standard to Closing Power Windows Only. All of the motor vehicle manufacturers who commented on the notice supported this part of the proposal generally for the reasons the agency set out in the proposal.

Of the three individuals who commented on this question, one expressed unqualified support, and two, Misters C.R. Blydenburgh and Charles B. Jones, expressed disagreement. Mr. Blydenburgh commented that NHTSA's position apparently does not contemplate a child's falling out of an open window, and noted that because power windows are easier to operate than a conventional window, the likelihood is greater that a small child will be exposed to this safety risk in a vehicle with a power window system. Mr. Jones stated that a child can be injured if the child puts a finger between the glass and traction slot on an opening window.

The agency agrees with Mr. Blydenburgh that some children may find it easier to operate a power window than a conventional one. However, NHTSA does not agree that this condition creates a significant safety risk. First, the agency believes that most children who would be at risk of falling out of a vehicle after opening one of its power windows are youngsters of about 2 or 3 years old. All 50 states and the District of Columbia require that these children be in child safety seats. The most recent results in a 19-city survey reveal that for August through October of 1987, child restraint usage in the survey area was 82%. Since children who are properly restrained are not subject to this risk and since a substantial majority of children are restrained, the potential population subject to the risk suggested by Mr. Blydenburgh is limited. Similarly, a child who is properly restrained is somewhat less likely to subject himself to the harm that Mr. Jones addresses.

Second, the risk of injury as a result of falling from an open window is greatest in a moving vehicle. Since this amendment only regulates the operation of power windows in stationary vehicles, it will not affect the safety risk suggested by Mr. Blydenburgh. Further, in many vehicles equipped with power window systems, a driver may prevent the operation of power windows. For small children, this design feature can make a power window system safer than a conventional one, and again reduces the prospect of a child catching a finger between the glass and traction slot.

Finally, the agency is not aware of any data supporting a safety need to restrict power window openings. For these reasons, and for the reasons set out in the NPRM, NHTSA is amending the Standard so that it applies only to the closing of power windows. The provision of this amendment narrowing the application of Standard 118 to opening power-operated windows and partitions, will be effective 30 days after publication in the *Federal Register.* (§571.118, paragraph S3.) The agency finds that there is good

cause for making paragraph S3 effective in less than 180 days because the change will relieve a restriction, thereby expanding manufacturer flexibility.

Other Issues. As noted earlier in this notice, the agency proposed other changes to Standard 118. Earlier in this document, the agency described the two options under consideration with respect to paragraph S3(c). They were (1) deleting the word "key" from the term "key-locking system" to expand design options for external power window controls, or (2) deleting paragraph S3(c) altogether, and thereby prohibit external controls on the vehicle for closing power windows. The remaining proposed change was to extend the Standard to cover power-operated sunroofs. The agency has determined to reassess these proposals, and to issue a subsequent notice of proposed rulemaking addressing them. NHTSA is delaying action on these issues for the following reasons.

While most commenters said that non-key locking systems should be permissible, a few raised the question of whether it is possible for unsupervised children more easily to gain access to a vehicle through a key-less locking system. One commenter stated that a touch-pad system lends itself to this danger, while an infrared remote system would not. The agency has some concern whether key-less systems present an unreasonable safety risk, or whether a minimum force requirement for operating such systems would reduce any unreasonable risk. NHTSA will invite comment and explore these issues in the subsequent NPRM.

All but one of the relevant comments opposed the alternative suggestion of prohibiting any external control for opening a power window. After having reviewed the comments, NHTSA tentatively concluded that a ban on all external power window system controls would be inappropriate given the absence of data that show external key-locking systems present an unreasonable safety risk. However, if the agency determines that key-less locking systems should be an acceptable means for complying with Standard 118, then NHTSA may propose performance requirements for external key-less systems. For example, there is a question whether a key-less locking system should operate only when a positive force is applied to the locking device. These matters should be the subject of another proposal.

Most relevant comments endorsed the agency's proposal to extend the Standard to power-operated roof systems, although a number suggested alternative wording so that power-operated convertible roofs do not fall under the Standard. Some of these power roofs operate through the key-less kinds of controls that the agency is considering addressing in a subsequent notice. Use of key-less systems for power roofs is permissible since power roofs are not currently subject to the Standard. If the agency were to extend the Standard and its current prohibition against key-less locking systems to power roofs, then those power roofs using those systems would have to be redesigned. Until the agency resolves the issue of key-less locking controls, NHTSA has determined to maintain the status quo. This means that there is no prohibition against installing a key-less locking system for sunroofs.

In consideration of the foregoing, NHTSA amends Title 49 CFR §571.118 as follows:

S2 would be revised to read as follows:

S2. *Application.* This standard applies to passenger cars, multipurpose passenger vehicles, and trucks with a gross vehicle weight rating of 10,000 pounds or less.

3. S3 would be revised to read as follows:

S.3. *Operating Requirements.* Power window or partition systems may be closed only in the following circumstances:

(a) * * * * *

Issued on June 21, 1988

Diane K. Steed
Administrator

53 F.R. 23766
June 24, 1988

MOTOR VEHICLE SAFETY STANDARD NO. 118

Power-Operated Window Systems

(Docket No. 69-11a)

S1. Purpose and scope. This standard specifies requirements for power-operated window and partition systems to minimize the likelihood of death or injury from their accidental operation.

S2. Application. [This standard applies to passenger cars, multipurpose passenger vehicles, and trucks with a gross vehicle weight rating of 10,000 pounds or less.] **(53 F.R. 23766—June 24, 1988. Effective: July 25, 1988)**

S3. [Operating Requirements. Power window partition systems may be closed only in the following circumstances.]

(a) When the key that controls activation of the vehicle's engine is in the "ON", "START", or "ACCESSORY" position;

(b) By muscular force unassisted by a vehicle power source;

(c) Upon activation by a key-locking system on the exterior of the vehicle; or

(d) During the interval between the time the locking device which controls the activation of the vehicle's engine is turned off and the opening of either of a two-door vehicle's doors or, in the case of a vehicle with more than two doors, the opening of either of its front doors. **(53 F.R. 23766—June 24, 1988. Effective: July 25, 1988)**

35 F.R. 11797
July 23, 1970

PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 119

New Pneumatic Tires for Vehicles Other Than Passenger Cars

(Docket No. 71–18; Notice 3)

This notice establishes a new Motor vehicle safety standard No. 119 *New pneumatic tires for vehicles other than passenger cars*, 49 CFR 571.119, which specifies performance and labeling requirements for new pneumatic tires designed for highway use on multipurpose passenger vehicles, trucks, buses, trailers and motorcycles manufactured after 1948, and which requires treadwear indicators in tires, and rim matching information concerning those tires.

Notices of proposed rulemaking on this subject were published on August 5, 1971 (36 F.R. 14392), and July 8, 1972 (37 F.R. 13481).

The July 1972 notice proposed that, instead of including the voluminous "tire tables" of tire size designations, maximum loads and inflation pressures, and dimensions in the standard, the manufacturers continue as at present to use the industry association tire and rim manuals for the purpose of product standardization. Since the only tire characteristics relevant to the safety performance tests of the standard are general tire type, speed restrictions, maximum load rating, load range, and rim diameter, all of which are readily available or labeled on the tire itself, the tables are not necessary for the performance requirements. To prevent these private associations from having ultimate regulatory power over individual manufacturers, a provision was included in the proposal by which a manufacturer who wished to differ from the values in the association tables could do so by providing separate information to the NHTSA, to his dealers, and to the public upon request. To prevent the under-rating of tires of an established size designation, another provision would prohibit the assignment by a manufacturer of a maximum load rating to a particular tire size designation that is lower than the load rating already published elsewhere for that tire size designation.

Many domestic tire manufacturers objected to lack of tire tables on the grounds that it in effect endorsed non-standardization of tire specifications. They and some representatives of the trucking industry speculated that there might be danger of mis-match arising from the production of tires whose dimensions deviate substantially from the published dimensional specifications for tires of that size designation. Several of the domestic manufacturers recommended inclusion of the (American) Tire and Rim Association tables in the standard because of the experience that domestic manufacturers have with road conditions in the United States.

Other manufacturers, however, supported the deletion of tire tables for several reasons. They argued that a single standard would discourage innovation in tire design and suggested that the complexities of selection and maintenance of truck tires could not be reduced to a single table of values. They asserted that standardized new-tire dimensions do not eliminate the need to measure tires for proper dual matching, because tires wear differently in use and thereafter rarely match new or used tires of the same size.

Upon consideration of all relevant information, the NHTSA has concluded that the position taken in the proposal is sound, and it is adopted in the rule. The inclusion in the Code of Federal Regulations of load-inflation and dimension tables for every road tire sold in this country (they presently are included in Standard 109 only for passenger cars) would be a vastly cumbersome process, not only in its inception but as a continuous maintenance task. The NHTSA finds no justification at this time for undertaking

to monitor substantively the manufacturer processes and testing that lead to the continual changes in the standard association tables, so its function in this regard would be largely clerical. The point is not, as the (U.S.) Rubber Manufacturers Association asserted, primarily one of "administrative convenience". It is that no justification has been found for locking both the government and the world tire industry into a restrictive and unwieldy system by which the Code of Federal Regulations is formally amended every time a manufacturer decides to add a tire size, or change the load rating or dimensional specifications of one of its tires. There are many reasons to avoid over-regulation; "administrative convenience" is among the least of them.

This agency has no intent to dilute the standardizing function of the trade-association table systems that presently are used to provide necessary tire and rim information to dealers and users. These systems monitor the safety aspects of tire dimension and load rating satisfactorily now without government regulation, and the NHTSA expects that they will continue to do so. No evidence has been presented of under- or over-sizing of tires that would warrant the institution of a massive government regulatory program in that area. If such a practice should arise in the future to a degree that constitutes a public hazard, the NHTSA has ample authority to deal with it specifically, as a safety-related defect, and prospectively, under its rulemaking powers.

The argument that the agency should include only the domestic Tire and Rim Association tables, thereby requiring foreign tire manufacturers to build tires under the specifications, and presumably the approval, of the domestic association, is found to be without merit. The wording and the legislative history of the National Traffic and Motor Vehicle Safety Act show a clear Congressional intent to give evenhanded treatment to domestic and foreign manufacturers of motor vehicles and equipment, and this has always been the policy of the NHTSA. This agency has no evidence that foreign associations or manufacturers lack the information necessary to produce safe tires for the American market.

Finally, the argument that the agency could or should by some means prevent "proliferation" of new tire sizes is without substance. No concrete justification has been presented for attempting to limit the introduction of new tire sizes, and to date no significant safety problems have been found caused by the addition of new tire sizes. The NHTSA assumes that the competition and consumer demand forces of the private sector will operate as in other areas of our economy, to produce a satisfactory product population.

The criteria for tire failure in the endurance and high speed laboratory tests have been substantially modified from those of the proposal in response to comments to this docket and Docket 71–10, Notice 2 (37 F.R. 19381, September 20, 1972), which proposed identical changes in the passenger car tire failure criteria. This regulation adopts the same failure criteria as were adopted in final form for passenger car tire tests on September 28, 1973 (38 F.R. 27050), and relies on several new and revised definitions found in Standard 109. The preamble to the passenger car tire amendment fully explains the modifications made, and it is only noted here that the changes are substantially in agreement with manufacturers' requests to specify the tire failures with particularity. A pre-test inspection has been added to discover failures in construction evident without dynamic testing. Additionally the required air pressure following the test run has been raised to 100 percent of the original pressure.

Several comments questioned the inclusion of all non-passenger car tires in one standard, pointing out that tire design differs radically to optimize desirable characteristics for each vehicle type and application. However, this standard does not attempt to measure the optimum characteristics of each type of non-passenger tire. This standard only establishes minimum performance characteristics which any type of tire must satisfy to be safely used on public highways. Passenger car tires have been subjected to such a standard in the past and this proposal extends a comparable minimum standard to all other tire types designed for highway use. The requirements recognize the design differences

between tire types by establishing different test values for different tire types, size, construction, load ranges, and speed restrictions.

Comments to the docket requested physical tolerances and related accommodations for test purposes. These arise from misunderstanding of the legal nature of the safety standards, which are performance levels that each vehicle or item of motor vehicle equipment must meet, and not instructions for manufacturer testing. The temperature conditions for tire testing have been reworded to reflect the legal meaning and the NHTSA testing practices relative to tire standards. The proposed standard would make clear that the tire must be capable of meeting the requirements when tested at any ambient temperature up to 100° F. The legal significance of this requirement is explained in a general provision of Part 571, § 571.4, *Explanation of usage.* In NHTSA compliance testing, the ambient temperature would be maintained in a range between 90° and 100° F., and any test failure under those conditions would be considered a failure to meet the standard. Manufacturer testing should be directed at proving the tire's capability in the exercise of due care, by testing under conditions at least as adverse as any that could be established in accordance with these procedures.

The trucking industry questioned the advisability of labeling maximum inflation and load rating on the tire because it appeared to prohibit the adjustment of pressures to road conditions. The purpose of the labeling is to establish test values for the tire and to warn the user of the tire's maximum capabilities . The label does not prohibit adjustment of pressure to suit road conditions or prevent a manufacturer from recommending other inflation-load combinations on the tire or in accompanying literature to suit specific circumstances.

European manufacturers objected to the requirement that load rating be indicated by a "load range" index not in world-wide use. The primary purpose of the load range index is to indicate categories of strength within the size designations, for user information and test purposes. It should be understood that a manufacturer may use whatever additional systems he chooses to indicate his assessment of tire strength. Information such as metric equivalents and ply ratings, for example, may be added to sidewall labeling as long as the required information appears in the required format on the tire.

Several manufacturers suggested that labeling appear on only one side of a tire when both sides of the tire, as mounted, will be available for inspection. Accordingly, motorcycle tires must now be labeled on one side only, but the inaccessibility of both sidewalls on truck and bus tires for visual inspection precludes one-sidewall labeling of these categories.

Despite this inaccessibility, however, the identification code appears on one sidewall only, because placing the ID slug in the upper half of a hot process mold is a difficult and dangerous operation. In response to another labeling request, the DOT symbol must not be placed on the tire before the effective date of the standard.

Several manufacturers argued for greater design freedom in the placement of treadwear indicators because the proposed locations could generate useless, arbitrary information when applied to "lug" tread designs. In response, tread "groove", "width", and "depth" have been defined so that the treadwear indicators are placed to indicate wear in that portion of the tread which contacts the ground.

Several comments on the endurance requirement requested lower test loads and speed to approximate actual driving conditions on flat surfaces. The NHTSA does not utilize the laboratory test wheel to simply approximate road conditions but rather to apply strictly controlled amounts of stress to moving tires over long periods in order to measure a minimum level of performance. Industry testing established these values and they have been independently verified in NHTSA's Safety Systems Laboratory as an accurate gauge of tire endurance. Another manufacturer expressed confusion about the appropriate endurance test standards for mining and logging tires. These tires are generally speed-restricted tires and should be tested in accordance with the values established in Table III for all other speed-restricted tires.

In response to another comment, it should be noted that test accuracy also requires a stand-

ardized test wheel diameter, because the wheel's curvature directly affects a tire's ability to absorb strain.

Several manufacturers requested elimination of the pressure reading following the 47-hour run so that they could run the tire to destruction in accordance with industry test practices without stopping to make the measurement. This request can not be granted because the new procedures for evaluating tire failure necessitate stopping after the run to inspect the tire, in addition to stopping to take a pressure reading.

Comments raised the validity of the strength test when applied to tires incorporating recent innovations in tire design. It appears that recent changes in the construction of passenger car tires, especially the addition of belts under the tread, have tended to make the strength test specified in Standard 109 obsolete (38 F.R. 1055, January 8, 1973). However, the construction of non-passenger tires permits accurate measurement of tire strength without the "bottoming out" problem noted in the comments, if the proper plunger size and breaking energy value are used. A differential in breaking energy value between tubed and tubeless tires accommodates the smaller dimensions of the newer tubeless configurations that replace tube tires of the same load range. The "light truck" category accommodates the different design and construction materials which manufacturers use in these tires designated for this specialized service. The NHTSA does not agree that lower breaking energy values should apply to tires under 7 inches in section width as suggested in one comment, because these tires are no smaller than typical passenger car tires subjected to similar testing and similar conditions on the highway. In response to another comment, the NHTSA has concluded that differences in the construction of steel-belted tires are not sufficient to justify lower energy values in the plunger test similar to those extended to rayon tires.

Objections to the high speed performance requirements questioned the testing of all light tires (load ranges A, B, C, and D) under the same high-speed conditions. The NHTSA has eliminated speed-restricted tires from the requirements but will maintain high-speed requirements for all motorcycle, trailer, and truck tires. While it is true that these tires are specially constructed for their purpose and often are mounted on vehicles marked with speed restrictions, there is no assurance that these tires will be properly utilized. The difficulty lies with drivers who ignore rental trailer speed limits, subject boat or mobile home trailer tires to higher than recommended speeds, attempt to improve the performance of their low speed motorcycles, or drive trucks equipped with light truck tires at high speed on the highway. This probability of abuse creates a safety problem which can be met by requiring these tires to withstand such high speed abuse. Load range D tires over 15 inches in section width are presently subject to the high speed test but may be reclassified on the basis of future test experience.

Comments to the docket objected to the proposed effective date and requested up to 18 months leadtime following issuance of the standard on the grounds that the large variety of tires to be certified requires substantial enlargement of test facilities. This standard has been in various proposal stages for 4 years, however, which has provided the tire industry ample opportunity to make plans for the acquisition and installation of test facilities and therefore leadtime of 9 months is considered adequate.

In consideration of the foregoing, a new Standard 119, *New pneumatic tires for vehicles other than passenger cars*, is added to Part 571 of Title 49, Code of Federal Regulations, to read as set forth below.

Effective date: September 1, 1974.

(Secs. 103, 112, 113, 114, 119, 201, Pub. L. 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1402, 1403, 1407, 1421; delegation of authority at 49 CFR 1.51.)

Issued on November 5, 1973.

James B. Gregory
Administrator

38 F.R. 31299
November 13, 1973

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 119

New Pneumatic Tires for Vehicles Other than Passenger Cars

(Docket 71–18; Notice 5)

This notice amends Standard 119, *New pneumatic tires for vehicles other than passenger cars*, 49 CFR 571.119, by changing the effective date from September 1, 1974, to March 1, 1975.

A major concern of manufacturers commenting on Standard 119 as it was published in final form on November 13, 1973, (38 F.R. 31299), with a September 1, 1974, effective date, was the limited leadtime in which to modify tire molds and certify the conformity of tires. Correct use of the DOT symbol, lettering height, and clarification of treadwear indicator language required attention before the changeover process could begin.

Manufacturers requested up to 11 months' additional leadtime in view of these difficulties. Amendments have been proposed that would resolve these specific problems. Because the range of non-passenger car tires is so great, however, the National Highway Traffic Safety Administration has determined that even with these changes an additional 6 months' leadtime is justified to accomplish full certification.

Other matters raised by petitions for reconsideration are presently under consideration and will be answered in accordance with the procedures of 49 CFR 553.35, *Petitions for reconsideration.*

In consideration of the foregoing, Standard 119 (49 CFR § 571.119) is amended by changing the effective date of September 1, 1974, to March 1, 1975.

Because this amendment creates no additional burden, and because changeover scheduling must begin immediately, it is found for good cause shown that notice and public procedure thereon are impracticable and unnecessary.

(Secs. 103, 119, 201, Pub. L. 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1407, 1421; delegation of authority at 49 CFR 1.51.)

Issued on January 29, 1974.

James B. Gregory
Administrator

39 F.R. 4087
February 1, 1974

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 119

New Pneumatic Tires for Vehicles Other than Passenger Cars

(Docket 71–18; Notice 6)

This notice responds to petitions for reconsideration on Standard 119, *New pneumatic tires for vehicles other than passenger cars*, 49 CFR 571.119, published November 13, 1973 (38 F.R. 31299). In response to comments by twelve tire manufacturers and trade associations, the definitions, labeling, and performance provisions of the standard are amended in several respects.

Justification for Issuance of Standard 119

The Rubber Manufacturers Association (RMA), supported by most domestic tire manufacturers, petitioned for withdrawal of Standard 119 on the grounds that promulgation of the standard did not satisfy the criteria for the establishment of Motor Vehicle Safety Standards set out in § 103 of the National Traffic and Motor Vehicle Safety Act of 1966. Section 103(f) of the Act requires that the formulation of a standard include consideration of its appropriateness for particular items of motor vehicle equipment, relevant safety data, and the extent to which it will contribute to carrying out the purposes of the Act. As formulated a standard must be practicable, meet the need for motor vehicle safety, and be stated in objective terms.

In petitioning for withdrawal of Standard 119 for failure to "meet the need for motor vehicle safety," the RMA and those tire manufacturers who support its position effectively assert that no tire safety hazard exists which can be met by Standard 119. The National Highway Traffic Safety Administration (NHTSA) does not agree.

Congress recognized a tire safety problem. The Senate held hearings on and considered a bill devoted totally to tire safety (S1643). The House included a separate title in H.R. 13228 to emphasize tire safety as a particularly important area for the issuance of safety standards.

> In a number of bills which have been introduced in both Houses as well as in a bill which has passed the Senate (S.2669) the necessity for standards for tires was considered as an independent problem and without reference to its relationship to the total traffic safety problem. S.2669 is confined only to the improvement of tires for passenger cars and station wagons. The committee decided that although *tires are a highly important part of the total traffic safety problem* they are, nevertheless, an integral part of it and should be dealt with in the context of the problem and not in a piecemeal fashion. . . .
>
> However the committee did feel that it was necessary to emphasize this aspect of the safety problem and to establish certain specific requirements which should be contained in the Secretary's standards on tires. (emphasis supplied) H.R. Rep. No. 1776, 89th Cong., 2d Sess. 32 (1966).

On the House floor, Representative Springer detailed the effect of the legislation on motor vehicle equipment.

> Obviously, the most important piece of equipment which comes to mind is the tire. The other body treated this subject in separate legislation, but it seems to me, and it did to our committee, that tire standards must be part and parcel of any legislation which seeks to impose standards of safety for the cars on the highway. Consequently, a portion of the bill was devoted specifically to this subject. It requires minimum standards for all tires, and then sees to it that the buyer will have all the information he needs to make a decision as to the tire he needs.

112 Cong. Rec. 18,780 (daily ed. Aug. 17, 1966)

Congress showed particular interest in passenger car tires, but did not limit the legislation to them, as suggested by Firestone in its petition for reconsideration. As the House report notes, Title II represents a broadening of the tire safety issue from passenger cars and station wagons. The language of Title II refers to tires of "each motor vehicle" and to a uniform tire quality grading system "for motor vehicles." Section 204 is devoted to regrooved tires which are commonly utilized on non-passenger cars.

The NHTSA has concluded that the tire safety problems recognized by Congress can best be met by Standard 119. The standard requires labeling and tire-rim matching information to aid proper application of the tire, and minimum performance levels to ensure adequate designed-in safety for normal use and predictable abuse on the road. The standard is directed at misuse of tires as well as their correct use.

It is true that Bureau of Motor Carrier Safety statistics indicate that professional maintenance, cost consciousness, and frequent state inspections result in a lower than normal number of tire failures on interstate haulers. These figures, however, are not representative of tire conditions throughout the multipurpose passenger vehicle (MPV), truck, bus, motorcycle, and trailer categories. Congress mandated minimum tire safety standards although it was aware that tire failure statistics were difficult to isolate, realizing that tire design, while not a major cause of failures in well-maintained tires, could offer a margin of safety where tires are misused. Hearings on S.1634 Before the Senate Commerce Committee on Tire Safety, 89th Cong., 1st Sess., ser. 89–37 at 41 (1965); Hearings on S.3005 Before Senate Commerce Committee on Traffic Safety, 89th Cong., 2nd Sess., ser. 89–49 at 158, 159 (1966). In its formulation of the standard, the NHTSA considered data which showed that worn and misapplied tires create a significant safety hazard. Standard 119 ensures that the information required by Congress to be on tires, along with additional tire-rim matching information and treadwear indicators, are available to the unknowledgeable individual who must select, maintain, and replace non-passenger tires periodically. The RMA itself argued for the inclusion of load-rating information in this standard as an effective means to eliminate the dangers of proliferation and misapplication of tire sizes. In the area of tire design, the minimum performance levels in Standard 119 ensure a margin of safety for persons who may misapply or abuse tires despite the label information and treadwear warnings.

The NHTSA experience with performance standards for passenger car tires also supports Standard 119 rulemaking. Since the beginning of certification testing by the manufacturers and compliance testing by the NHTSA, the percentage of test failures has dropped from approximately 5.6% to less than 1%. At the same time 88 recalls of 1,436,118 tires have removed from the road substantial numbers of tires which could not be shown in the exercise of due care to be able to meet the minimum requirements. Standard 119 has similar performance tests, calculated to produce close surveillance of test failure percentages and recalls when a faulty tire design is identified. The performance test levels vary according to tire type to ensure that the standard is reasonable, practicable, and appropriate for the particular tire design in its intended service application.

The NHTSA has found that Standard 119 will weed out faulty tire design and promote safety. The test values of Standard 119 were originally proposed by industry and checked by the NHTSA at its Safety Systems Laboratory. The RMA conducted a similar series of tests at that time and later endorsed the requirements as modified in minor respects:

> The laboratory tests and values in the proposed FMVSS 119 as amended by our comments would set standards of performance that would enable the industry to design tires that would ensure safe operation on the highways. Comment #4 to Dockst 1–5, Notice 7 (p 6).

By reference to *H & H Tire Company v. United States Department of Transportation*, 471 F2d 350 (7th Cir 1972), the RMA and Firestone raised the issue of Standard 119's prac-

ticability. This requirement, at § 103(a) of the Act, was interpreted in *H&H* to mean that the NHTSA must determine the technological and economic consequences of the standard on the regulated industry. In that case the Court determined that the retread tire industry could be destroyed by the expense of major product redesign or the loss of business which could result from passing on these costs in higher prices to the typical retread consumer. The Court also pointed out that the retread consumer might use older worn tires longer than previously and thereby in effect increase the tire hazard problem in response to Standard 117.

In contrast, the NHTSA has determined that compliance with Standard 119 does not require significant or impracticable technological change. Tests run at the Safety Systems Laboratory indicate that a sampling of production-run tires can meet the required performance levels, as they are now constructed. An analysis of benefits and costs demonstrates that the costs of additional testing are less than the estimated savings in property and lives. Finally, the consumer of new tires is less likely than the retread consumer to shift his tire purchase habits and has less opportunity to do so. The NHTSA has carefully determined the technological and economic impact of Standard 119 on the new tire industry and found it to be practicable.

The NHTSA totally disagrees with the RMA and Firestone in their final argument that safety-related defect notification offers adequate protection to consumers without the addition of a safety standard. Firestone inaccurately equates the effect of a standard with that of a notification campaign, claiming that in either case a manufacturer must recall tires containing defects or face civil penalties. Issuance of a standard imposes significantly greater responsibility on a manufacturer to assure himself in the exercise of due care that his product is safe before it is sold and subsequent use reveals a safety-related defect.

Technical Consideration of Standard 119

The Application section (S3.) raised several questions about the standard's relationship to Standard 109-type tires, experimental tires, and low speed and off-road vehicle tires. The standard applies to new tires designed for highway use on non-passenger-car motor vehicles. The present language makes clear that tires which do not meet these criteria are not subject to the standard, including those tires subject to Standard 109. The tire manufacturer himself must determine whether his tires, restricted or not to speeds under 35 mi/h, or used on slow-moving vehicles on or off the highway, were designed by him for highway use. As an example, Dunlop cited moto-cross tires which use the public highway "during the course of competitions." Without evidence to the contrary, however, the NHTSA assumes that these tires are used to get to and from the competition over the public highways. In answer to a related request for interpretation by Bridgestone, it is the designed and intended use of the tire (as realistically anticipated by the manufacturer) that matters, not a simple marking such as "Not For Highway Use" on the tire sidewall. In the case of "experimental" or "survey" tires the tires are designed for highway test purposes and are subject to the standard.

The definition of light truck tire has been revised in response to comments from the RMA and the Japan Automobile Tire Manufacturers Association. They cited a number of light truck tires which may or may not share a common size designation or dimensions with passenger tires, but still require special test values because of their heavy-service construction.

Standard 119 does not include the voluminous "tire tables" of tire size designation, maximum loads and inflation pressures, and dimensions requested by the domestic tire industry. An explanation of this approach accompanied issuance of the rule (38 F.R. 31299, November 13, 1973). While the RMA and Goodyear have restated their earlier position that product standardization can only be assured by Government publication of industry association tables, they did not respond to the extensive justification made with the rule. The NHTSA concludes that its determination is sound.

Nearly all tire manufacturers commented on Standard 119's labeling provisions and the amount of leadtime necessary to implement them. To resolve the most pressing problems, the NHTSA has already issued notices that postpone

the effective date of the standard 6 months and propose a lettering size and depth, use of the DOT symbol prior to the standard's effective date, and clarification of the treadwear indicator requirement. (39 F.R. 4087, February 1, 1974, 39 F.R. 3967, January 31, 1974). All other petitions which concern the labeling provisions are treated in this response.

The RMA and the European Tyre and Rim Technical Organization (ETRTO) requested changes in paragraph S6.5(d) ("Tire marking"), several of which are adopted in this amendment. The word "corresponding" is inserted before "inflation pressure" to accommodate tires whose maximum load rating is not at maximum inflation. Punctuation is removed from the legend that appears on the tire to simplify stamping. The example is revised to make clear that "TIRE RATED FOR SINGLE AND DUAL LOAD" and "TIRE RATED ONLY FOR SINGLE LOAD" do not appear on the tire sidewall. ETRTO suggested that a title appear on the tire to qualify the information provided, but the NHTSA has concluded that the information alone is more helpful to the unknowledgeable user, and that a knowledgeable user would refer to the tire tables for exact information before changing tire inflation pressure.

Paragraph S6.5(e) on speed restricted tires has been clarified to limit the requirement to tires restricted to 55 mi/h or less. S6.5(f) remains unchanged, because the National Traffic and Motor Vehicle Safety Act of 1966 requires that the actual number of plies and ply composition appear on the tire sidewall. The words "tube type" appear on tires under S6.5(g) because many consumers are unaware of the significant distinctions between tube type and tubeless tires. Dunlop's request that treadwear indicators be required on tires that are regrooved is beyond the authority under which Standard 119, applying only to new tires, was issued.

Paragraph S6.5(j) calls for a single letter to appear on the tire to indicate categories of strength within the size designation, for user information and test purposes. As the ETRTO pointed out, a requirement for any additional wording such as "load range" could confuse international standardization efforts. Manufacturers are, of course, entitled to add labeling information as long as the required information appears in the required format on the tire.

The maximum load rating provision in S6.6 requires tires of a particular size to have a maximum load rating at least as great as the lowest rating published for that size. In this way the publications do not mislead a consumer who assumes that a particular tire size must have only the load ratings listed. The RMA advocated that more particular load rating information be supplied to aid in actual tire selection. Reference to any factors other than tire size, however, would detract from the desired concept that, for one tire size, there is one lowest maximum load rating, and that load rating is published.

Two substantial requests were raised with regard to the endurance requirement. Uniroyal petitioned for a reduction in the duration of the three test phases to 4 hours each. The NHTSA is considering that submission but must deny action on it at this time because an independent evaluation of the procedures has not yet been conducted, and because there has not been notice or opportunity to comment on the proposal by all interested persons.

The RMA petitioned for 34-hour endurance testing of all tires subject to the high speed test (S6.3) on the grounds that the 47-hour speed/endurance test would be redundant. The NHTSA agrees and has revised Table III accordingly.

The ETRTO proposed new test values for some motorcycle tires, but the request was unclear as to the meaning of the 62 mi/h criterion and the unsupported request cannot be granted. If, in the future, the ETRTO petitions for rulemaking to revise the table, an explanation of the criterion and a justification for the test values would permit an informed decision.

Comments to the strength test questioned plunger size and energy values, the computation procedures, and the appropriateness of the test to mobile home, special trailer, wide base, and radial tires.

The RMA argued that the limited service of most mobile home and special trailer tires could not justify the increased cost necessary to upgrade the strength of the tires to meet the requirement. The NHTSA has consistently treated

mobile homes and other trailers as full-fledged motor vehicles and applied applicable standards rigorously to reduce the number of crashes in which mobile homes are involved, as indicated by BMCS statistics. The RMA request is denied to ensure that equally-rated tires on towed and towing vehicles will, in fact, meet equal minimum strength requirements.

The RMA and ETRTO generally advocated larger plungers or reduced energy values for tires and the ETRTO petitioned for the exclusion of radial tires from the strength test. The NHTSA has determined that the established values and plunger sizes, drawn from industry experience, adequately measure tire strength. Any future petitions for rulemaking to change these values should be accompanied by detailed supporting data, as was submitted by Uniroyal in its petition for reconsideration.

Comments again requested that a plunger which contacts the rim be considered to have established an energy value which meets the strength requirement. The NHTSA reiterates its position that the standard's present energy values measure the strength of a well-constructed non-passenger car tire before the tire breaks or the plunger contacts the rim. Specific test values may be revised based on future test experience, but revision of the calculation procedures used for all tires is not justified. The request for three plunger applications in the case of 12-in. or smaller diameter tires has been granted.

Michelin and the ETRTO have inquired as to the NHTSA's position with regard to tubeless tires above load range J. Such tires, when marketed in the United States, are subject to this standard, and the NHTSA would like the benefit of detailed description of, and test experience with, these tires before it establishes test requirements. It is requested that support for ETRTO or Michelin values be submitted to the NHTSA Tire Division.

The high speed performance requirement was adopted to test different tire characteristics from those tested under the endurance performance requirement. The test is run only on non-speed-restricted tires in the lighter load ranges because, for tires of heavier construction, the endurance test alone develops temperatures which evaluate all the characteristics satisfactorily. The RMA and several manufacturers have pointed out that the endurance test can serve this purpose for large tires even in the lighter ranges, and the NHTSA, therefore, restricts the high speed requirements to motorcycle tires and to non-speed-restricted tires of 14.5-in nominal rim diameter or less marked Load Range A, B, C, or D. Light truck tires and other tires which are 14.5-in and smaller remain subject to the high speed requirements because the NHTSA has determined that the high speed test measures different values than the endurance test in these smaller sizes.

The definition of tire failure is closely related to the endurance and high speed performance tests. The RMA and several tire manufacturers requested re-definitions of several terms and revision of the tire cooling procedures related to tire failure. The NHTSA has established Docket 71–10, *New pneumatic tires, revised performance requirements*, to treat the re-definition of tire failure, and will respond to these issues in a notice to that docket.

Interested persons should remember that, in addition to the amendments set forth below, the NHTSA has already amended the effective date of the Standard to March 1, 1975, and has proposed amendments to the lettering, DOT certification, and treadwear provisions which will be acted on when comments have been considered.

In consideration of the foregoing, amendments are made to Parts 571 and 574 of Title 49, Code of Federal Regulations. . . .

Effective date: March 1, 1975.

(Secs. 103, 112, 113, 114, 119, 201, Pub. L. 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1402, 1403, 1407, 1421; delegation of authority at 49 CFR 1.51.)

Issued on February 7, 1974.

James B. Gregory
Administrator

39 F.R. 5190
February 11, 1974

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 119

New Pneumatic Tires for Vehicles Other Than Passenger Cars

(Docket No. 71–18; Notice 7)

This notice amends Standard No. 119, *New pneumatic tires for vehicles other than passenger cars*, 49 CFR 571.119, to specify lettering sizes and modified treadwear indicator requirements for tires. In addition, it amends Part 574, *Tire Identification*, 49 CFR 574, to permit the labeling of certain tires with the symbol DOT prior to the effective date of the standard. This notice also responds to petitions for reconsideration of Standard 119's effective date by maintaining the present date of March 1, 1975.

To avoid a costly production shutdown on the effective date to engrave tire molds with the DOT compliance symbol required by the standard, the National Highway Traffic Safety Administration (NHTSA) proposed a modification of the Part 574 prohibition on the symbol's use prior to the effective date (39 F.R. 3967, January 31, 1974). The Rubber Manufacturers Association and five tire manufacturers agreed that the DOT should be engraved on tire molds prior to the effective date, but objected to the expense of covering the DOT with a label stating that "no Federal motor vehicle safety standard applies to this tire," when the DOT appears on tires which (presumably) satisfy Standard 119 requirements. Firestone pointed out that the large label size could obscure other label information. Goodrich noted that, as proposed, the DOT could be molded on tires which met no standard and could mislead a user if the label fell off.

The NHTSA will not permit the appearance of the DOT compliance symbol on any item of motor vehicle equipment to which no standard is applicable. The terms "applicability" and "applies" have only one meaning for Federal motor vehicle safety standards: that the vehicle or equipment concerned is subject to a safety standard. To permit use of the DOT symbol on vehicles or items of motor vehicle equipment to which no standard applies would confuse the meaning of the symbol and the concept of compliance.

In response to Firestone and Goodrich, the NHTSA has modified the lettering size on the label and limited use of the DOT symbol to tires for which a standard has been issued. With the small lettering size, the rubber labels used on retread tires can be applied over the DOT symbol in fulfillment of the requirement. Another method which manufacturers did not mention but which would be permissible is the removal of the DOT at the same time imperfections are buffed off the tire.

All comments on the proposal objected to the specific location requirements for treadwear indicators based on the concept of even tread wear across the tread width. Goodyear demonstrated in a meeting with the NHTSA Tire Division on February 13, 1974, and detailed in its submission to the Docket, the difficulty in equating ideal tire wear with actual road experience. They recommended the simpler concept that a tire has worn out when any major tread groove has only $^2/_{32}$ in tread remaining. The NHTSA has concluded that treadwear indicators must be placed at the discretion of the manufacturer to give a person inspecting the tire visual indication of whether the tire has worn to a certain tread depth. Accordingly, the lateral location requirements for treadwear indicators have been deleted from the standard.

There was no discussion of the lettering size and depth proposal, and these proposals are adopted as proposed.

The comments requested reconsideration of the standard's March 1, 1975, effective date (published February 1, 1974, 39 F.R. 4087), asserting the need for 18 months of lead time following publication of this notice to engrave tire molds as required by the standard. The NHTSA has found that 11 months is sufficient leadtime to accomplish these changes, and accordingly these petitions are denied.

To correct an inadvertent omission in the amendment of Standard No. 119 in response to petitions for reconsideration (39 F.R. 5190, February 11, 1974), superscripts are added to Table III entries for "All other, A, B, C, D range tires".

In consideration of the foregoing, Parts 571 and 574 of Title 49, Code of Federal Regulations, are amended. . . .

Effective date: Standard No. 119 amendments: March 1, 1975. Part 574 amendment: April 3, 1974. Because the Part 574 amendment creates no additional burden, and because modification of tire molds must begin immediately, it is found for good cause shown that an effective date less than 180 days after issuance is in the public interest.

(Secs. 103, 112, 119, 201, Pub. L. 89–563, 80 Stat. 718; 15 U.S.C. 1392, 1401, 1407, 1421; delegation of authority at 49 CFR 1.51.)

Issued on March 28, 1974.

James B. Gregory
Administrator

39 F.R. 12104
April 3, 1974

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 119

New Pneumatic Tires for Vehicles Other Than Passenger Cars

(Docket No. 74–25; Notice 2)

This notice amends the definition of "test rim" in 49 CFR 571.109 (Motor Vehicle Safety Standard No. 109) and modifies related provisions of that section and § 571.110 (Motor Vehicle Safety Standard No. 110). A conforming amendment is made to similar provisions in § 571.119 (Motor Vehicle Safety Standard No. 119). The notice of proposed rulemaking on which this amendment is based was published on July 10, 1974 (39 F.R. 25329).

The definition of "test rim" has previous to this amendment referenced the 1967 and earlier editions of publications of various foreign and domestic tire and rim associations as the source for determining rim specifications and appropriate tire/rim matching information for testing tires to the requirements of Motor Vehicle Safety Standard No. 109, and for equipping passenger cars pursuant to Motor Vehicle Safety Standard No. 110. The Rubber Manufacturers' Association petitioned that this reference be changed because the publications have become outdated in terms of the rim information they provide. This amendment, which adopts the proposed rule of July 10, 1974, in essentially the form proposed, deletes the references to the 1967 and earlier publications and substitutes for them the publications of the various associations current at the time of tire manufacture.

Under the amendment, a "test rim" will be any rim listed for use with a tire size designation in any of the current publications of the various foreign and domestic tire and rim associations. The listing will apply to all tires that fit the description (by tire size designation, use category, etc.) unless the publication itself or a separately published manufacturer's document states otherwise. A manufacturer wishing to except any tire manufactured by him from any listing would be expected to request the association to publish the exception in its publication. If it does not, the manufacturer must himself publish the exception in his own listing, which he must distribute to his dealers, this agency, and to any member of the public on request. The language of the proposal is clarified, and a conforming amendment made to Standard No. 119 to show that an exception must be published in each association publication listing the tire and rim combination. The amendment further specifies that a "listing" of a rim must contain dimensional specifications, including diagrams, for the rim. This is necessary to provide for uniformity of rim dimensions and reflects the present practice of association publications of publishing such dimensional specifications. However, dimensional specifications or a diagram of a rim need not be included in manufacturers' separate listings if the specifications and diagram for the rim appear in each association publication where it is listed.

By referencing the current publications, the amendment ends the need for Appendix "A" of Standard No. 110, which lists tire/rim combinations approved for use subsequent to the 1967 and earlier associations publications. The associations and various manufacturers should ascertain that all tire/rim combinations presently listed in that Appendix are incorporated into at least one of their respective publications before the effective date of this amendment. Moreover, the addition of new tire/rim combinations subsequent to the effective date becomes the sole responsibility of the industry. Appendix "A" of Standard No. 109, listing tire size designations, is not affected by this amendment.

An effect of the amended definition of test rim is to clarify this agency's position that each tire must be able to pass each performance requirement (except that for physical dimensions) of Standard No. 109 with any rim with which it is listed, regardless of rim width, unless that tire is specifically excepted from each listing where it appears. The requirements for physical dimensions must be met only on a test rim of the width specified for the tire size designation in Standard No. 109. A tire failing the requirements on any test rim would be considered as having failed the requirements on all test rims. This continues existing NHTSA enforcement policy.

One of the two comments received regarding the proposal objected to this aspect of the amendment, arguing that some manufacturers have traditionally certified conformity on the basis of test results using only the test rims of the specified test rim width and that no safety problems had been encountered. The NHTSA believes, however, that the interest of safety demands that manufacturers ensure that tires certified as conforming to Standard No. 109 will conform to the standard's requirements on any rim which the manufacturer lists for use with the tire and with which the tire may consequently be used in service. This position has been reflected in the guidelines for the additions of new tire/rim combinations to the Appendix of Standard No. 110, which have required that the manufacturer demonstrate conformity to Standard No. 109 on each newly requested rim. If a manufacturer doubts the ability of his tires to conform to the standard on certain recommended rims, he has the option of excepting his tires from being used with those rims. No other objections to the proposed rule were received.

In light of the above, amendments are made to 49 CFR §§ 571.109, 571.110, and 571.119 . . . .

Effective date: August 5, 1975 for Standards No. 109 and 110; March 1, 1975, for Standard No. 119. The amendment to Standard No. 119 is of a clarifying nature, and should be made effective with the existing effective date of that standard. The amendment does not require substantial leadtime for conformity, and it is found for good cause shown that an effective date less than 180 days from publication is in the public interest.

(Secs. 103, 119, 201, 202, Pub. L. 89–563, 80 Stat. 718; 15 U.S.C. §§ 1392, 1407, 1421, 1422; delegation of authority at 49 CFR 1.51.)

Issued on January 31, 1975.

James B. Gregory
Administrator

40 F.R. 5529
February 6, 1975

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 119

New Pneumatic Tires for Vehicles Other Than Passenger Cars

(Docket No. 71–18, Notice 10)

This notice establishes a uniform tire testing temperature for the test requirements of the Uniform Tire Quality Grading regulation and the Federal motor vehicle safety standard for non-passenger-car tires. This amendment simplifies existing requirements by permitting various tire tests to be conducted at the same temperature.

Effective date: July 17, 1978.

For further information contact:

Arturo Casanova III, Crash Avoidance Division, Office of Vehicle Safety Standards, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590 (202–426–1715).

Supplementary information: The National Highway Traffic Safety Administration (NHTSA) proposed on March 3, 1977, to amend the ambient temperature conditions for tire testing contained in Standard No. 119, *New Pneumatic Tires for Vehicles Other Than Passenger Cars* (49 CFR 571.119), and in Part 575, *Uniform Tire Quality Grading* (49 CFR 575.104) (UTQG). The purpose of this proposed amendment was to harmonize existing tire testing temperatures as requested by the Goodyear Tire and Rubber Company. The ambient temperatures were previously specified as follows:

Standard No. 109: "100±5° F."

Standard No. 119: "any temperature . . . up to 100° F."

UTQG: "at 105° F."

In the notice of proposed rulemaking, the agency proposed to amend Standard No. 119 and UTQG to reflect the tire temperature utilized in Standard No. 109 (100±5° F.). As an alternative method of expressing the test temperature, the NHTSA proposed to amend the standards to specify "any temperature up to 95° F.

Five comments were received in response to that proposal. All comments favored the proposed amendment that would have instituted a 100±5° F. temperature. The Vehicle Equipment Safety Commission did not take a position on this proposal.

After consideration of the issues involved in the proposal and review of the comments, the agency has determined that the test temperature should be expressed as "any temperature up to 95° F." Accordingly, Standard No. 119 and UTQG are amended to specify temperature testing at "any temperature up to 95° F." It is the NHTSA's opinion that the 95° F. test temperature is in effect the same test temperature as would be achieved by using the 5-degree tolerance (100±5).

The NHTSA has often stated in interpretations on similar issues that the use of tolerances in safety standards reflects a misunderstanding of the legal nature of the safety standards. Standards are not instructions, but performance levels that vehicles or equipment are required by law to be capable of meeting. Any tolerance in this context would be meaningless and misleading, since it would merely have the effect of stating a performance level that the equipment must meet when tested by the government, but in a confusing manner.

Recognizing that no measurement is perfectly precise, a manufacturer's tests should be designed to show, using tire testing temperature as an example, that his tires will comply with the requirements at exactly 95° F. This may be done in at least two ways: (1) by using a test method that corresponds so closely to the required tem-

perature that no significant differences could occur as a result of differences between the actual temperature and the specified one, or (2) by determining which side of the specified temperature is adverse to the product tested, and being sure that the actual temperature of the test differs from the specified one on the adverse side.

The amendment of Standard No. 119 and UTQG to reflect the 95° F. temperature creates a different temperature phraseology for those standards than exists in Standard No. 109 which still has the 100±5° F. temperature. As stated earlier, the NHTSA considers the Standard No. 109 temperature tolerance to mean in actuality "any temperature up to 95° F." However, since modification of that standard was not proposed in the earlier notice, the agency does not amend it in this final rule. However, the agency intends to issue an interpretive amendment that will amend Standard No. 109 to adopt the alternative expression for tire temperature testing (any temperature up to 95° F.) unless objections are received.

In accordance with Departmental policy encouraging analysis of the impact of regulatory actions upon the public and private sectors, the agency has determined that this modification will result in no appreciable safety gains or losses. These amendments may result in slightly lower costs for tire temperature testing since all temperatures will be uniform.

Since these amendments relieve restrictions and impose no additional burdens, it is found for good cause shown that an immediate effective date is in the public interest.

In consideration of the foregoing, the following amendments are made in Parts 571 and 575 of Title 49, Code of Federal Regulations. . . .

The program official and lawyer principally responsible for the development of this rulemaking document are Arturo Casanova and Roger Tilton, respectively.

(Secs. 103, 112, 119, 201, 203, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1401, 1421, 1423); delegation of authority at 49 CFR 1.50.)

Issued on July 12, 1978.

Joan Claybrook
Administrator

43 F.R. 30541–30542
July 27, 1978

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 119 AND PART 574

Tire Identification and Recordkeeping; New Pneumatic Tires for Motor Vehicles Other Than Passenger Cars

[Docket No. 84-10; Notice 2]

ACTION: Final rule.

SUMMARY: This notice amends Standard No. 119, *New pneumatic tires for motor vehicles other than passenger cars* and Part 574, *Tire identification and recordkeeping,* to permit the marking required by that standard to appear at a point other than between the maximum section width and the bead of the tire. This amendment, which responds to a petition for rulemaking from Michelin Tire Corporation, will permit the manufacture of tires where the maximum section width of the tire is at the bead. The purpose of the current requirements is to locate certain safety markings in an area where they would not be scuffed off when the sidewall of the tire hits a curb or other objects, and so that accurate information would remain on the sidewall after a tire has been retreaded. However, we have concluded that alternatives are available to solve these concerns, and therefore, the rule should be amended to permit the introduction of a new tire technology.

EFFECTIVE DATE: May 2, 1985.

SUPPLEMENTARY INFORMATION: On September 26, 1984 (49 FR 37815) NHTSA published a notice proposing an amendment to Standard No. 119, *New pneumatic tires for motor vehicles other than passenger cars* and Part 574, *Tire identification and recordkeeping,* in response to a petition for rulemaking from Michelin Tire Corporation (Michelin). Michelin petitioned the agency for a change in those standards because of a new tire that it had developed. As currently written, those standards require certain marking to appear between the maximum section width and the bead of a tire. However, Michelin's new tire has its maximum section width at the bead and thus it could not mark these tires at the location currently specified in the agency's standards.

The purpose of the current requirement is that the marking be located in an area where the safety marking would not be scuffed off when the sidewall of the tire hits a curb or other objects. In addition, the requirement was meant to ensure that accurate information would remain on the sidewall after the tire has been retreaded. The September 1984 notice has an extensive discussion of the rationale underlying the agency's proposal and readers are referred to that notice for further details. In brief, the September notice explained that while the reasons underlying the requirement are still valid, there are alternatives available to solve these concerns, and therefore, the rule should be amended to permit the introduction of a new concept in tires.

The agency received no comments on the proposal. The agency, therefore, is adopting it for the reasons set forth in the September notice.

In consideration of the foregoing, Title 49 of the Code of Federal Regulations is amended as set forth below:

Part 571

1. Section S6.5 of 571.119 is amended to read as follows:

S6.5 *Tire markings.* Except as specified below, each tire shall be marked on each sidewall with the information specified in paragraphs (a) through (j) of this section. The markings shall be placed between the maximum section width (exclusive of sidewall decorations or curb ribs) and the bead on at least one sidewall, unless the maximum section

width of the tire is located in an area which is not more than one-fourth of the distance from the bead to the shoulder of the tire. If the maximum section width falls within that area, the markings shall appear between the bead and a point one-half the distance from the bead to the shoulder of the tire, on at least one sidewall. The markings shall be in letters and numerals not less than 0.078 inches high and raised above or sunk below the tire surface not less than 0.015 inches, except that the marking depth shall be not less than 0.010 inches in the case of motorcycle tires. The tire identification and the DOT symbol labeling shall comply with part 574 of this chapter. Markings may appear on only one sidewall and the entire sidewall area may be used in the case of motorcycle tires and recreational, boat, baggage, and special trailer tires.

Part 574

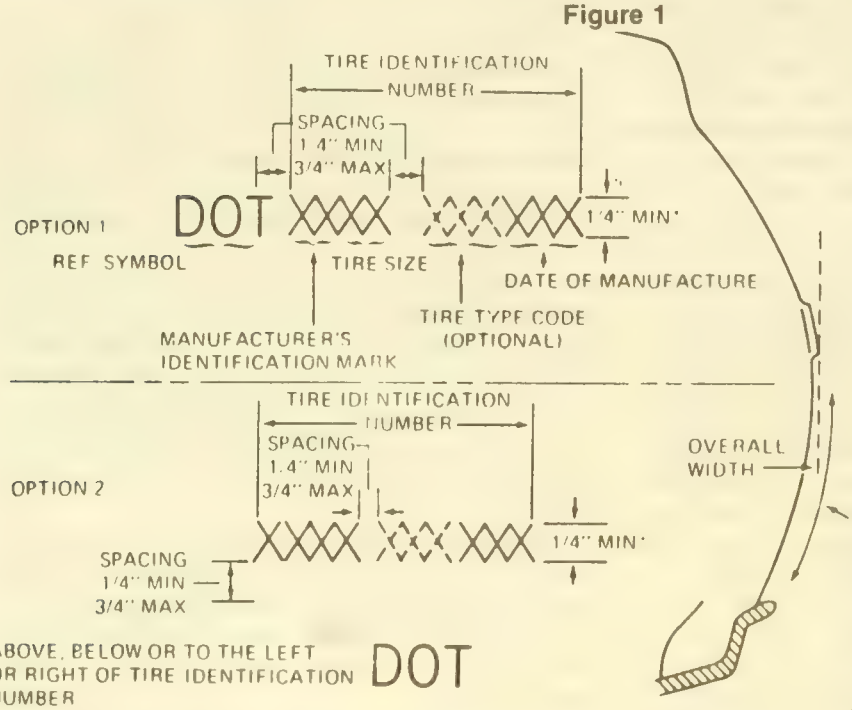
1. Figure 1 in §574.5 of Part 574 is revised to appear as follows:

Issued on March 12, 1985.

Diane K. Steed
Administrator

50 FR 10772
March 18, 1985

Figure 1



Locate all required labeling in lower segment of one sidewall between maximum section width and bead so that data will not be obstructed by rim flange, unless maximum section width falls between the bead and one-fourth of the distance from the bead to the shoulder of the tire. For tires where the maximum section width falls in that area, locate all required labeling between the bead and one-half the distance from the bead to the shoulder so that data will not be obstructed by rim flange.

*5/32" LETTERING FOR TIRES OF LESS THAN 6.00 INCH CROSS SECTION WIDTH AS WELL AS THOSE LESS THAN 13" BEAD DIAMETER MAY BE USED

FIGURE 1 IDENTIFICATION NUMBER FOR NEW TIRES

Notes:

1. Tire identification number shall be in Futura Bold, Modified Condensed or Gothic characters permanently molded (0.020 to 0.040" deep, measured from the surface immediately surrounding characters) into or onto tire at indicated location on one side (See Note 4)
2. Groups of symbols in the identification number shall be in the order indicated. Deviation from the straight line arrangement shown will be permitted if required to conform to the curvature of the tire.
3. When Type Code if ommited, or partially used, place Date of Manufacture in the unused area.
4. Other print type will be permitted if approved by the administration.

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 119

New Pneumatic Tires for Vehicles Other Than Passenger Cars
(Docket No. 89-14; Notice 1)
RIN: 2127-AD20

ACTION: Technical Amendment.

SUMMARY: In response to a petition by the Tyre and Rim Association of Australia (TRAA), this notice amends Standard No. 109, Standard No. 119, and Standard No. 120 to include the TRAA in the list of standardization organizations. In addition, this notice corrects an oversight in an earlier technical amendment. Because these changes represent only technical corrections to the agency's listing of recognized standardization organizations and impose no obligations on any party, the agency finds for good cause that notice and opportunity for comment are unnecessary.

EFFECTIVE DATE: September 18, 1989.

SUPPLEMENTARY INFORMATION: Section S4.4.1(b) of Standard No. 109, *New Pneumatic Tires — Passenger Cars* and section S5.1(b) of Standard No. 119 (49 CFR 571.109), *New Pneumatic Tires for Motor Vehicles Other Than Passenger Cars* (49 CFR 571.119) each contain listings of various standardization organizations. Similarly, section S5.2(a) of Standard No. 120, *Tire Selection and Rims for Motor Vehicles Other Than Passenger Cars*, sets forth rim marking symbols related to the standardization organizations. A standardization organization is a voluntary association composed of representatives of member tire companies. The purpose of a standardization organization is to establish and promulgate engineering standards for tires, rims, and their allied parts. NHTSA relies on standardization organizations to list acceptable rim sizes for each tire size and for technical information regarding tire sizes.

The Tyre and Rim Association of Australia (TRAA) submitted a petition to NHTSA requesting that it be included in NHTSA's listing of standardization organizations in Standard No. 109 and Standard No. 119. TRAA also submitted its Articles of Incorporation.

NHTSA has decided to grant the petition and adopt the petitioner's request without affording an opportunity for public comment because these changes represent only technical corrections to the agency's listing of recognized standardization organizations. They impose no obligations on any party. Rather, they accommodate the wishes of the listed organization. Accordingly, the agency finds for good cause that notice and opportunity for comment are unnecessary, and these changes are effective as soon as this notice is published.

In addition, on June 6, 1983, NHTSA issued a similar technical amendment which intended to eliminate from the list of standardization organizations the Society of Motor Manufacturers & Traders Ltd. (SMMT) (48 FR 25209). It has come to the agency's attention that the 1983 notice deleted only some of the references to SMMT. That notice failed to delete references to SMMT in Appendix A, paragraph 4 of Standard No. 109 and section 5.2(a) of Standard No. 120. This notice eliminates these references. Because these technical corrections impose no obligations on any party, the agency finds for good cause that notice and opportunity for comment are unnecessary.

1. In consideration of the foregoing, section S4.4.1(b) of 49 CFR §571.109 is revised to read as follows:

(b) Contained in publications, current at the date of manufacture of the tire or any later date, of at least one of the following organizations:
The Tire and Rim Association
The European Tyre and Rim Technical Organisation
Japan Automobile Tire Manufacturers' Association, Inc.
Deutsche Industrie Norm
British Standards Institution
Scandinavian Tire and Rim Organization
The Tyre and Rim Association of Australia

* * * * *

2. Appendix A, paragraph 4 of 49 CFR § 571.109 is revised to read as follows:

4. A statement as to whether the tire size designation and load inflation schedule has been coordinated with the Tire and Rim Association, the European Tyre and Rim Technical Organisation, the Japan Automobile Tire Manufacturers' Association, Inc., the Deutsche Industrie Norm, the British Standards Institution, the Scandinavian Tire and Rim Organization, and the Tyre and Rim Association of Australia.

* * * * *

3. Section S 5.1(b) of 49 CFR § 571.119 is revised to read as follows:

* * * * *

(b) Contained in publications, current at the date of manufacture of the tire or any later date, of at least one of the following organizations:
The Tire and Rim Association
The European Tyre and Rim Technical Organisation
Japan Automobile Tire Manufacturers' Association, Inc.
Deutsche Industrie Norm
British Standards Institution
Scandinavian Tire and Rim Organization
The Tyre and Rim Association of Australia
* * * * *

4. Section S5.2(a) of 49 CFR § 571.120 is revised to read as follows:
* * * * *

(a) A designation which indicates the source of the rim's published nominal dimensions, as follows:
(1) "T" indicates The Tire and Rim Association.
(2) "E" indicates The European Tyre and Rim Technical Organisation
(3) "J" indicates Japan Automobile Tire Manufacturers' Association, Inc.
(4) "D" indicates Deutsche Industrie Norm.
(5) "B" indicates British Standards Institution.
(6) "S" indicates Scandinavian Tire and Rim Organization.
(7) "A" indicates The Tyre and Rim Association of Australia.
(8) "N" indicates an independent listing pursuant to S4.4.1(a) of Standard No. 109 or S5.1(a) of Standard No. 119.
* * * * *

Issued on: September 12, 1989

Jeffrey R. Miller
Acting Administrator

54 F.R. 38385
September 18, 1989

MOTOR VEHICLE SAFETY STANDARD NO. 119

New Pneumatic Tires for Vehicles Other Than Passenger Cars

S1. Scope. This standard establishes performance and marking requirements for tires for use on multipurpose passenger vehicles, trucks, buses, trailers, and motorcycles.

S2. Purpose. The purpose of this standard is to provide safe operational performance levels for tires used on motor vehicles other than passenger cars, and to place sufficient information on the tires to permit their proper selection and use.

S3. Application. This standard applies to new pneumatic tires designed for highway use on multipurpose passenger vehicles, trucks, buses, trailers and motorcycles manufactured after 1948.

S4. Definitions. All terms defined in the Act and the rules and standards issued under its authority are used as defined therein.

"Light truck tire" means a tire designated by its manufacturer as primarily intended for use on lightweight trucks or multipurpose passenger vehicles.

"Model rim assembly" means a test device that (a) includes a rim which conforms to the published dimensions of a commercially available rim, (b) includes an air valve assembly when used for testing tubeless tires or an innertube and flap (as required) when used for testing tube-type tires, and (c) undergoes no permanent rim deformation and allows no loss of air through the portion that it comprises of the tire-rim pressure chamber when a tire is properly mounted on the assembly and subjected to the requirements of this standard.

S5. Tire and rim matching information.

S5.1 Each manufacturer of tires shall ensure that a listing of the rims that may be used with each tire that he produces is provided to the public. For purposes of this section, each rim listing shall include dimensional specifications and a diagram of the rim. However, a listing compiled in accordance with paragraph (a) of this section need not include dimensional specifications or a diagram of a rim if the rim's dimensional specifications and diagram are contained in each listing published in accordance with paragraph (b). The listing shall be in one of the following forms:

(a) Listed by manufacturer name or brand name in a document furnished to dealers of the manufacturer's tires, to any person upon request, and in duplicate to: Tire Division, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590; or

(b) Contained in publications, current at the date of the manufacture of tire or any later date, of at least one of the following organizations:

[The Tire and Rim Association.
The European Tyre and Rim Technical Organisation.
Japan Automobile Tire Manufacturers' Association, Inc.
Deutsche Industrie Norm
British Standards Institution.
Scandinavian Tire and Rim Organization.
The Tyre and Rim Association of Australia

(54 F.R. 38385—September 18, 1989. Effective: September 18, 1989.)]

S5.2 Information contained in a publication specified in S5.1(b) which lists general categories of tires and rims by size designation, type of construction, and/or intended use, shall be considered to be manufacturer's information pursuant to S5.1 for the listed tires, unless the publication itself or specific information provided according to S5.1(a) indicates otherwise.

S6. Requirements Each tire shall be capable of meeting any of the applicable requirements set forth below, when mounted on a model rim

assembly corresponding to any rim designated by the tire manufacturer for use with the tire in accordance with S5. However, a particular tire need not meet further requirements after having been subjected to and met the endurance test (S6.1), strength test (S6.2), or high speed performance test (S6.3).

S6.1 Endurance.

S6.1.1 Prior to testing in accordance with the procedures of S7.2, a tire shall exhibit no visual evidence of tread, sidewall, ply, cord, innerliner, or bead separation, chunking, broken cords, cracking, or open splices.

S6.1.2 When tested in accordance with the procedures of S7.2:

(a) There shall be no visual evidence of tread, sidewall, ply, cord, innerliner, or bead separation, chunking, broken cords, cracking, or open splices.

(b) The tire pressure at the end of the test shall be not less than the initial pressure specified in S7.2(a).

S6.2 Strength. When tested in accordance with the procedures of S7.3 a tire's average breaking energy value shall be not less than the value specified in Table II for that tire's size and load range.

S6.3 High speed performance. When tested in accordance with the procedures of S7.4, a tire shall meet the requirements set forth in S6.1.1 and S6.1.2(a) and (b). However, this requirement applies only to motorcycle tires and to non-speed-restricted tires of 14.5-in nominal rim diameter or less marked load range A, B, C, or D.

S6.4 Treadwear indicators. Except as specified below, each tire shall have at least six treadwear indicators spaced approximately equally around the circumference of the tire that enable a person inspecting the tire to determine visually

TABLE I—Strength Test Plunger Diameter

Tire type:	Plunger Diameter (inches)
Light truck	3/4
Motorcycle	5/16
Tires for 12-inch or smaller rims, except motorcycle	3/4
Tires other than the above types:	
Tubeless:	
17.5-inch or smaller rims	3/4
Larger than 17.5-inch rims:	
Load range F or less	1 1/4
Load range over F	1 1/2
Tube type:	
Load range F or less	1 1/4
Load range over F	1 1/2

TABLE II—Minimum Static Breaking Energy (Inch-Pounds)

Plunger diameter	5/16 Inch	3/4 Inch		1 1/4 Inch		1 1/2 Inch	
Tire characteristic	Motorcycle	All 12-inch or smaller rim size	-Light truck -17.5 inch or smaller Rim Tubeless	Tube type	Tubeless	Tube type	Tubeless
Load range							
A	150	600	2000	----	----	----	----
B	300	1200	2600	----	----	----	----
C	400	1800	3200	6800	5100	----	----
D	---	2400	4550	7900	6500	---	----
E	--	3000	5100	12500	8600	----	----
F	---	3600	5700	15800	12500	----	----
G	---	----	6300	----	----	20200	1500
H	---	----	6800	----	----	23000	18500
J	---	----	----	----	----	25000	19500
L	---	----	----	----	----	27000	----
M	---	----	----	----	----	28500	----
N	---	----	----	----	----	30000	----

For rayon cord tires, applicable energy values are 60 percent of those in table.

TABLE III—Endurance Test Schedule

Description	Load range	Test wheel speed (rpm)	Test load: Percent of maximum load rating			Total test revolutions (thousands)
			I 7 hrs.	II 16 hrs.	III 24 hrs.	
Speed-Restricted service						
55 m.p.h.	All	125	66	84	101	352.5
50 m.p.h.	C, D	150	75	97	114	423.0
	E, F, G, H, J, L	100	66	84	101	282.0
35 m.p.h.	All	75	66	84	101	211.5
Motorcycle	All	250	[1]100	[2]108	117	510.0
All others	A, B, C, D,	250	[1]75	[2]97	114	510.0
	E	200	70	88	106	564.0
	F	200	66	84	101	564.0
	G	175	66	84	101	493.5
	H, J, L, N	150	66	84	101	423.0

[1] 4 hours for tire sizes subject to high speed requirements (S6.3)
[2] 6 hours for tire sizes subject to high speed requirements (S6.3)

whether the tire has worn to a tread depth of one-sixteenth of an inch. Tires with 12-inch or smaller rim diameter shall have at least three such treadwear indicators. Motorcycle tires shall have at least three such indicators which permit visual determination that the tire has worn to a tread depth of one-thirty-second of an inch.

S6.5 Tire marking. Except as specified below, each tire shall be marked on each sidewall with the information specified in paragraphs (a) through (j) of this section. The markings shall be placed between the maximum section width (exclusive of sidewall decoration or curb ribs) and the bead on at least one sidewall [unless the maximum section width of the tire is located in an area which is not more than one-fourth of the distance from the bead to the shoulder of the tire. If the maximum section width falls within that area, the markings shall appear between the bead and a point one-half the distance from the bead to the shoulder of the tire, on at least one sidewall. (50 F.R. 10773—March 18, 1985. Effective: May 2, 1985)] The marking shall be in letters and numerals not less than 0.078 inches high and raised above or sunk below the tire surface not less than 0.015 inches, except that the marking depth shall be not less than 0.010 inches in the case of motorcycle tires. The tire identification and the DOT symbol labeling shall comply with Part 574 of this chapter. Markings may appear on only one sidewall and the entire sidewall area may be used in the case of motorcycle tires and recreational, boat baggage, and special trailer tires.

(a) The symbol DOT, which shall constitute a certification that the tire conforms to applicable Federal motor vehicle safety standards. This symbol may be marked on only one sidewall.

(b) The tire identification number required by Part 574 of this chapter. This number may be marked on only one sidewall.

(c) The tire size designation as listed in the documents and publications designated in S5.1.

(d) The maximum load rating and corresponding inflation pressure of the tire, shown as follows:

(mark on tires rated for single and dual load)
Max load single _____ lbs at _____ psi cold
Max load dual _____ lbs at _____ psi cold
(Mark on tires rated only for single load)
Max load _____ lbs at _____ psi cold

(e) The speed restriction of the tire, if 55 mi/h or less, shown as follows:

Max speed _____ mph

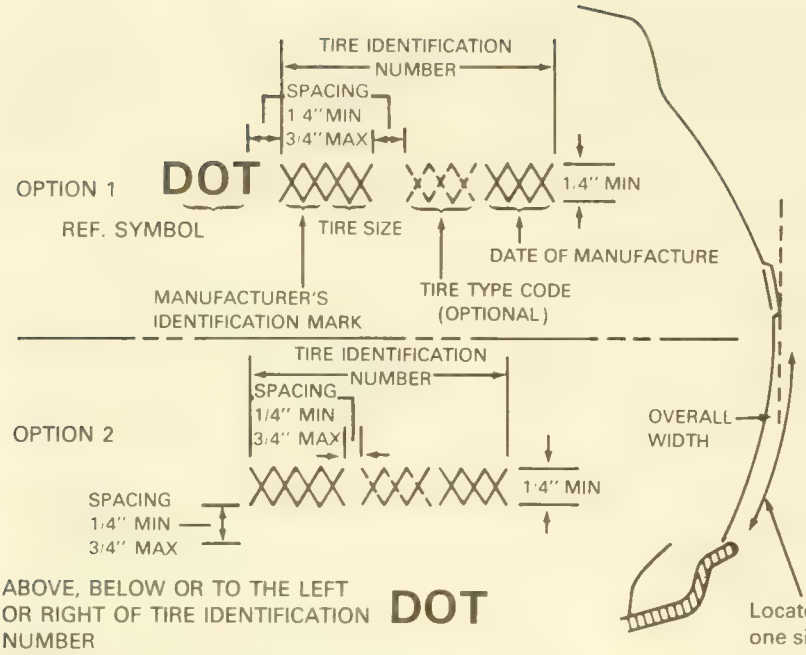
(f) The actual number of plies and the com position of the ply cord material in the sidewall, and, if different, in the tread area.

(g) The words "tubeless" or "tube type" as applicable.

(h) The word "regroovable" if the tire is de signed for regrooving.

(i) The word "radial" if a radial tire.

(j) The letter designating the tire load range.



- 5/32" LETTERING FOR TIRES OF LESS THAN 6.00 INCH CROSS SECTION WIDTH AS WELL AS THOSE LESS THAN 13" BEAD DIAMETER MAY BE USED

Notes:

1. Tire identification number shall be in Futura Bold, Modified Condensed or Gothic characters permanently molded (0.020 to 0.040" deep, measured from the surface immediately surrounding characters) into or onto tire at indicated location on one side. (See Note 4)
2. Groups of symbols in the identification number shall be in the order indicated. Deviation from the straight line arrangement shown will be permitted if required to conform to the curvature of the tire.
3. When Type Code is omitted, or partially used, place Date of Manufacture in the unused area.
4. Other print type will be permitted if approved by the administration.

Locate all required labeling in lower segment of one sidewall between maximum section width and bead so that data will not be obstructed by rim flange, unless maximum section width falls between the bead and one-fourth of the distance from the bead to the shoulder of the tire. For tires where the maximum section width falls in that area, locate all required labeling between the bead and one-half the distance from the bead to the shoulder so that data will not be obstructed by rim flange.

Figure 1. Identification Number for New Tires

S6.6 Maximum load rating. If the maximum load rating for a particular tire size is shown in one or more of the publications described in S5.1(b), each tire of that size designation shall have a maximum load rating that is not less than the published maximum load rating, or if there are differing published ratings for the same tire size designation, not less than the lowest published maximum load rating for the size designation.

S7. Test procedures.

S7.1 General conditions.

S7.1.1 The tests are performed using an appropriate new tube, tube valve and flap assembly (as required) that allows no loss of air for testing of tube-type tires under S7.2, S7.3, and S7.4, and tubeless tires under S7.3.

S7.1.2 The tire must be capable of meeting the requirements of S7.2 and S7.4 when conditioned at any ambient temperature up to 100° F. for 3 hours before the test is conducted, and with an ambient temperature maintained at any level up to 100° F. during all phases of testing. The tire must be capable of meeting the requirements of S7.3 when conditioned at any ambient temperature up to 70° F. for 3 hours before the test is conducted.

S7.2 Endurance. (a) Mount the tire on a model rim assembly and inflate it to the inflation pressure corresponding to the maximum load rating marked on the tire. Use single maximum load value when the tire is marked with both single and dual maximum load.

(b) After conditioning the tire-rim assembly in accordance with S7.1.2, adjust the tire pressure to that specified in (a) immediately before mounting the tire rim assembly.

(c) Mount the tire-rim assembly on an axle and press it against a flat-faced steel test wheel that is 67.23 inches in diameter and at least as wide as the tread of the tire.

(d) Apply the test load and rotate the test wheel as indicated in Table III for the type of tire tested conducting each successive phase of the test without interruption.

(e) Immediately after running the tire the required time, measure the tire inflation pressure. Remove the tire from the model rim assembly, and inspect the tire.

S7.3 Strength. (a) Mount the tire on a model rim assembly and inflate it to the pressure corresponding to the maximum load, or maximum dual load where there is both a single and dual load marked on the tire. If the tire is tubeless, a tube may be inserted to prevent loss of air during the test in the event of puncture.

(b) After conditioning the tire-rim assembly in accordance with S7.1.2, adjust the tire pressure to that specified in (a).

(c) Force a cylindrical steel plunger, with a hemispherical end and of the diameter specified in Table I for the tire size, perpendicularly into a raised tread element as near as possible to the centerline of the tread, at a rate of 2 inches per minute, until the tire breaks or the plunger is stopped by the rim.

(d) Record the force and the distance of penetration just before the tire breaks, or if it fails to break, just before the plunger is stopped by the rim.

(e) Repeat the plunger application at 72° intervals around the circumference of the tire, until five measurements are made. However, in the case of tires of 12-in rim diameter or less, repeat the plunger application at 120° intervals around the circumference of the tire, until three measurements are made.

(f) Compute the breaking energy for each test point by the following formula:

$$W = \frac{FP}{2}$$

where

W = Breaking energy
F = Force in pounds, and
P = Penetration in inches.

(g) Determine the average breaking energy value for the tire by computing the average of the values obtained in accordance with (f).

S7.4 High speed performance.

(a) Perform steps (a) through (c) of S7.2.

(b) Apply a force of 88 percent of the maximum load rating marked on the tire (use single maximum load value when the tire is marked with both single and dual maximum loads), and rotate the test wheel at 250 rpm for 2 hours.

(c) Remove the load, allow the tire to cool to 100° F., and then adjust the pressure to that marked on the tire for single tire use.

(d) Reapply the same load, and without interruption or readjustment of inflation pressure, rotate the test wheel at 375 rpm for 30 minutes, then at 400 rpm for 30 minutes, and then at 425 rpm for 30 minutes.

(e) Immediately after running the tire the required time, measure the tire inflation pressure. Remove the tire from the model rim assembly, and inspect the tire.

38 F.R. 31299
November 13, 1973

PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 120

Tire Selection and Rims for Motor Vehicles Other Than Passenger Cars

(Docket No. 71–19; Notice 3)

This notice establishes a new Federal Motor Vehicle Safety Standard No. 120, *Tire selection and rims for motor vehicles other than passenger cars*, 49 CFR 571.120, and amends 49 CFR Part 567, *Certification*. The new standard specifies tire and rim selection requirements for multipurpose passenger vehicles (MPV's), trucks, buses, trailers, and motorcycles, and marking requirements for rims for use on these vehicles. It also adds tire and rim matching information to the items required to appear on such vehicles' certification labels. The amendment to Part 567 makes that regulation consistent with the new standard. The notice is based on proposals which were published August 3, 1971 (36 F.R. 14273) and June 3, 1974 (39 F.R. 19505).

The standard requires new vehicles (other than passenger cars, which are the subject of Standard No. 110) to be equipped with tires that comply with either Standard No. 109, *New Pneumatic Tires—Passenger Cars*, or Standard No. 119, *New Pneumatic Tires for Vehicles Other Than Passenger Cars*. The tires must be fitted to rims which have been designated by the tire manufacturer, in accordance with S4.4 of Standard No. 109 or S5.1 of Standard No. 119, as suitable for use with those tires. The designations are made by listing the tire-rim matching information in one of seven industry-maintained publications or by furnishing this information to dealers of the manufacturer's tires, to any person upon request, and to the NHTSA.

Each axle must be equipped with tires the sum of whose load ratings is not less than that axle system's Gross Axle Weight Rating (GAWR). In certain situations, discussed below, a vehicle may be equipped with used tires of adequate load rating that were originally manufactured to comply with Standard No. 119. Adequacy is determined as follows: the sum of the maximum load ratings of the tires must be equal to or greater than the GAWR which is specified on the Part 567 certification label, with an exception discussed below. If the certification label lists more than one GAWR-tire combination for the axle, the sum of the tires' maximum load ratings must meet or exceed the GAWR that corresponds to the tires' size designation. If more than one combination is listed, but the size designation of the actual tires on the vehicle is not among those listed, then the sum of the load ratings must simply meet or exceed the lowest GAWR which does appear.

Rims must be marked with five items of information: the size designation (and, in the case of multipiece rims, the type designation), an indication of the source of the rim's nominal dimensions, and the DOT symbol must appear on the weather side, while identification of the manufacturer and date of manufacture may appear at any place on the rim's surface. The standard does not explicitly require that a rim conform to its published dimensions. If a rim's deviation from these nominal dimensions is so great that a safety hazard is presented, however, the defect notification and remedy provisions of the National Traffic and Motor Vehicle Safety Act of 1966, as amended, provide authority to deal with the hazard.

To reduce the possibility of confusion and to minimize the number of characters stamped on the rim, the standard establishes a set of code letters to indicate the source of the rim's nominal dimensions. "T", "E", "J", "D", "M", "B", and "S" indicate the industry publications listed in Standards Nos. 109 and 119, while "N" indicates

an independent listing with tire dealers and the NHTSA. The proposed requirement that the marking indicate the date of the publication has not been adopted because it does not appear necessary. The standard does not require manufacturers to be identified with a code number assigned by the NHTSA, because no action has been taken on the proposal published in the Federal Register on June 7, 1973 (38 F.R. 14968). The rim manufacturer is free to use his name, trademark, or a symbol of his choice. Because a rim's maximum load rating may be limited by its disc, this standard does not require that the maximum load rating be marked. The rim's maximum inflation pressure, while not affected by the choice of disc, is potentially misleading without additional marking of the disc. These rim markings are being considered in conjunction with further NHTSA rulemaking activity concerning wheels.

Several commenters objected to the proposed requirement of a tire-rim information label, separate from and adjacent to the certification label required by Part 567. Upon consideration of these comments, the NHTSA agrees that a separate placard is unnecessary. GVWR and GAWR are already required to appear on the certification label. If the required manufacturer exercises his option of listing more than one GVWR-GAWR combination, he is already required to indicate the proper tire size designations after each weight rating. Standard No. 120 further requires, for vehicles other than passenger cars, the following information to appear after each weight rating and tire size designation listed on the certification label: rim size designation, cold inflation pressure for the tires, and speed restriction (if any) for the tires. This information is now required to appear even when only one GVWR-GAWR combination is listed. The Part 567 label is thus expanded to include the information that would have appeared on the separate label described in S5.4 of the proposed Standard No. 120.

Many commenters pointed to the large number of possible axle-tire-rim combinations and suggested that the information label would be too large and confusing. Some discussed the vehicle manufacturer's difficulty in ensuring that the required information appear, given the common practice of changing tires and rims after a new vehicle has been shipped to a dealer. These commenters appear to have misunderstood the various proposed and existing requirements. Part 567 does not, in its prior form or as amended today, require a listing for more than one GVWR-GAWR-tire combination. Further, while S5.1.2 of Standard No. 120 requires the tires with which a new vehicle is equipped to be of adequate load rating for the GAWR, and while S5.3 requires an indication of tires adequate for the GAWR, there is no requirement that the actual tires be listed on the certification label. The tire information on that label is intended as a guide which tells the user what replacement tires, *as a minimum*, are appropriate for the listed GAWR and what rims are appropriate for those tires.

Guerdon Industries, Inc., objected to the requirement that vehicles be restricted to the load limits molded on tire sidewalls. The pointed to the mobile home industry's practice of loading tires to 150 percent of their load ratings, and argued that this practice should be permitted to continue. Examination of data compiled by the Bureau of Motor Carrier Safety, however, shows that from 1969 to 1972 (the most recent years for which figures are available), tires accounted for 18.0 percent of reported mobile home accidents. The NHTSA therefore rejects the proposition that such overloading does not present a safety hazard. There is no exception to the requirement that all vehicles be equipped with tires of adequate load rating.

Some commenters requested that tire overloading be permitted under restricted speed conditions. These commenters appear to have misunderstood the scope of the standard. Vehicles-in-use are regulated by the States and by the Bureau of Motor Carrier Safety. Standard No. 120 does not prohibit the overloading of tires in speed-restricted service, or otherwise regulate the use of tires or vehicles. The GVWR and GAWR information on the certification label is based on unrestricted service.

The formula described above for tire selection is subject to an exception for MPV's, trucks, buses, and trailers which are equipped with passenger car tires. The combined maximum load rating of the passenger car tires on an axle must be equal to or greater than 110 percent of the axle's GAWR. Some comments supported this exception as it was proposed. Others suggested that passenger car tires be permitted on such vehicles without the 110% factor, while the RMA and others argued that passenger car tires should not be permitted on trailers at all. The NHTSA rejects the argument that the 110% correction factor is unnecessary. Because non-passenger-car service on the average puts greater stresses on a tire (for example, trucks and trailers are driven at or near their maximum rated loads more often than passenger cars), a given load rating for a Standard No. 109 tires does not have the same meaning as the identical load rating for a Standard No. 119 tire. Conversely, the NHTSA has found no evidence that passenger car tires are inadequate for trailer service when the load correction factor is applied. The 110 percent factor is therefore adopted as proposed.

As proposed, the standard included an exception to the requirement that new vehicles be equipped with new tires conforming to Standard No. 109 or 119. Used tires were to be permitted on a truck, bus, or trailer (other than a mobile structure trailer) under the following conditions: the tires were originally manufactured to comply with Standard No. 119; they were of adequate load rating; they were owned or leased by the purchaser; and they were installed on the new vehicle at its place of manufacture at the purchaser's request. Comments on this exception were generally favorable, although one mobile home manufacturer objected to the exclusion of mobile structure trailers. The exception was intended to accommodate commercial delivery practices in the truck, bus, and trailer industry. While fleets which lease tires on a mileage-contract basis or which install their own used tires on new vehicles are in a good position to know the condition of these tires, the mobile home purchaser has no knowledge of the history of used tires installed on his vehicle. The proposed exception to the new tire requirement is therefore not extended to include all mobile structure trailers. It is, however, extended to include those delivered to the purchaser by a motor carrier, because a motor carrier (who is subject to Bureau of Motor Carrier Safety regulations) can be expected to be more familiar with tire safety needs than a typical purchaser. To clarify the proposed language, " originally manufactured to comply with Standard No. 119," the words "as evidenced by the DOT symbol" have been added to the text of the standard.

Several commenters pointed out that certain vehicles are designed for non-uniform side to side loading, and suggested that the proposed method of determining the necessary tire load rating from the GAWR (dividing GAWR by the number of wheel positions on the axle) is inadequate for such vehicles. These commenters argued that tire load rating should be based on the maximum wheel load, rather than on the GAWR. The standard issued today does not specify the maximum load rating to be exceeded by each tire on any given axle. Instead, it requires the sum of those load ratings to meet or exceed the GAWR. The manufacturer of an asymmetrically designed vehicle can therefore equip an axle with tires of differing load ratings. The NHTSA agrees that each tire should be capable of carrying its maximum expected wheel load. At this time, however, the NHTSA considers its defect authority, combined with the new standard, adequate to ensure that vehicles are equipped with such tires.

Definitions have been added to clarify the meaning of "rim base," "rim size designation," "rim type designation," "rim diameter," "rim width," and "weather side." Definitions suggested for other terms have not been included in the standard because the meanings have been found to be widely understood or self evident.

Many comments pointed out problems with a single effective date. For example, for marked rims to be available to vehicle manufacturers in time, and interval is necessary between the effective dates for the rim marking requirement and the requirement that vehicles be equipped with rims that comply with the standard. Similarly, to require all used tires, otherwise permitted by S5.1.3 to have originally been manufactured to

comply with Standard No. 119 would, without a delay in the effective date, cause the waste of pre-Standard No. 119 tires of adequate load-carrying capacity. Accordingly, a staggered system of effective dates is established as set out below.

In consideration of the foregoing, Chapter V of Title 49, Code of Federal Regulations, is amended....

Effective dates: For the amendment to Part 567: September 1, 1976. For Standard No. 120: August 1, 1976, for the rim marking requirements (S5.2), and September 1, 1976, for the remaining requirements except as otherwise provided in the standard.

(Secs. 103, 112, 114, 119, 201, 202, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1401, 1403, 1407, 1421, 1422); delegation of authority at 49 CFR 1.50.)

Issued on January 19, 1976.

James B. Gregory
Administrator

41 F.R. 3478
January 23, 1976

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 120

Tire Selection and Rims for Motor Vehicles Other Than Passenger Cars

(Docket No. 71–19; Notice 4)

This notice delays the effective dates of certain requirements of Standard No. 120, Tire Selection and Rims for Motor Vehicles Other Than Passenger Cars, and of the conforming amendment to 49 CFR Part 567, Certification, that was issued along with the standard. Its purpose is to permit manufacturers to avoid the burden of preparation for compliance with requirements that the NHTSA has determined should be amended. There is no delay, however, in the standard's basic tire and rim selection requirements, which become effective September 1, 1976.

Standard No. 120 (49 CFR § 571.120) was issued on January 19, 1976 (41 FR 3478; January 23, 1976; Notice 3). It specifies requirements for tire and rim selection, rim marking, and the provision of tire and rim information on vehicle certification labels. Part 567, the certification regulation, was amended in the same FEDERAL REGISTER notice, to accommodate the additional labeling.

Manufacturers are expected to begin preparations for compliance with a standard at the time a final rulemaking notice is issued. Lead times are established in accordance with this expectation, despite the possibility of future amendments. Fifteen petitions for reconsideration of Standard No. 120 have been received. From the petitions and other information available to this agency, the NHTSA has determined that certain provisions of the standard should be amended. However, the agency finds it impracticable to respond to the petitions by May 24, 1976, the date by which a response would be expected under its policy regarding such responses (49 CFR Part 553, Appendix). The agency plans to respond to the petitions not later than July 1, 1976. Without a delay of certain effective dates, manufacturers would be forced to make preparation for compliance with requirements that will, in all likelihood, be changed.

Accordingly, this notice changes from September 1, 1976, to September 1, 1977, the effective date of the requirement, found in S5.3, that certain information appear on a vehicle's certification label. The effective date of the conforming amendment to Part 567, *Certification*, is similarly changed to September 1, 1977. The effective date of S5.2, *Rim Marking*, is changed from August 1, 1976, to August 1, 1977. The date by which vehicles must be equipped with rims that are marked in accordance with the standard, which is presently specified in S5.1.1 as March 1, 1977, is changed to September 1, 1979. The NHTSA is considering the possibility of eliminating this requirement entirely, to simplify the phase-in of properly marked rims as they become available.

Manufacturers should note that, apart from the changed effective date for the requirement in S5.1.1 that vehicles be equipped with properly marked rims, there is no delay in the September 1, 1976, effective date of the standard's basic requirement, S5.1 (*Tire and Rim Selection*).

The symbol "DOT" is required by S5.2(c) to appear on every non-passenger-car rim manufactured on or after the effective date of the rim marking requirements, as a certification by the manufacturer of the rim that it complies with all applicable Federal motor vehicle safety standards. Several manufacturers have requested permission to begin stamping the symbol on rims that otherwise comply with the standard, before that effective date. In the past, the NHTSA has in similar situations taken the position that such use of the DOT symbol to indicate "anticipatory compliance" would necessarily be a false

or misleading certification, because no standard would in fact be in effect at the time of its use.

The agency has determined that a limited relaxation of this principle will not adversely affect its enforcement authority, yet will both foster early compliance with impending requirements and ease manufacturer's difficulties in transition to new production procedures. Accordingly, the NHTSA will not consider the use of the symbol "DOT" on an item of motor vehicle equipment that is not subject to any applicable and effective standard to be "false or misleading" if the following conditions are met: (i) there has, as of the date of manufacture of the item of equipment, been issued as a final rule a Federal motor vehicle safety standard to which the item of equipment would, but for that date's being earlier than the standard's effective date, be subject; and (ii) the item of equipment meets all requirements set out in the standard as most recently published before the date of manufacture of the equipment. The NHTSA will continue to consider other, unauthorized uses of the symbol to be "false or misleading in a material respect" within the meaning of Section 108(a)-(1)(C) of the National Traffic and Motor Vehicle Safety Act of 1966, as amended (15 U.S.C. 1398(a)(1)(C)).

This interpretation will permit the requested stamping that is discussed above. It will not permit the restamping, requested by several manufacturers, of previously manufactured rims that are in stock. These latter requests, however, are no longer of practical significance because of the other actions taken in this notice.

In consideration of the foregoing, the effective date of the amendment to 49 CFR Part 567, *Certification*, that was published on January 23, 1976 (49 FR 3478) is changed from September 1, 1976, to September 1, 1977, and changes are made to 49 CFR § 571.120 (Standard No. 120, *Tire Selection and Rims for Motor Vehicles Other Than Passenger Cars*) . . . .

Effective date: These changes in the text of the Code of Federal Regulations should be made immediately.

(Sec. 103, 112, 114, 119, 201, 202, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1401, 1403, 1407, 1421, 1422); delegation of authority at 49 CFR 1.50.)

Issued on April 29, 1976.

Robert L. Carter
Acting Administrator

41 F.R. 18659
May 6, 1976

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 120

Tire Selection and Rims for Motor Vehicles Other Than Passenger Cars

(Docket No. 71–19; Notice 5)

This notice amends Standard No. 120, Tire Selection and Rims for Motor Vehicles Other Than Passenger Cars (49 CFR 571.120), to permit until February 28, 1977, the equipping of new non-passenger-car vehicles with tires that do not meet certain tire labeling requirements but that otherwise meet all requirements of Standard No. 119 (New Pneumatic Tires for Vehicles Other Than Passenger Cars).

Standard No. 120 was issued on January 19, 1976 (41 FR 3478; January 23, 1976; Docket No. 71–19, Notice 3). It specifies tire and rim selection requirements for multipurpose passenger vehicles, trucks, buses, trailers, and motorcycles, and marking requirements for rims for use on these vehicles. It also adds tire and rim matching information to the items required to appear on such vehicles' certification labels. A staggered sequence of effective dates was set out in Notice 3, beginning with September 1, 1976.

In Notice 4 (41 FR 18659; May 6, 1976), the NHTSA delayed several of these effective dates, to permit manufacturers to defer preparation for compliance with the corresponding requirements pending action on petitions for reconsideration of Notice 3. The NHTSA expects to respond to these petitions in the near future. Notice 4 did not, however, change the basic September 1, 1976, effective date of the tire and rim selection requirements of S5.1. Beginning on that date, S5.1.1 of Standard No. 120 would require, with an exception that is not relevant here, new non-passenger-car vehicles to be equipped with tires that meet either Standard No. 109 (which is applicable to passenger car tires) or Standard No. 119 (which is applicable to all other tires). The practical effect is to require most such vehicles to be equipped with Standard 119 tires, because Standard 109 tires are appropriate for use only on certain non-passenger-car vehicles.

Standard No. 119 became effective on March 1, 1975, with an option to delay implementation of its labeling requirements until March 3, 1975 (see 40 FR 8188; February 26, 1975).

The NHTSA has received petitions for rulemaking from International Harvester (IH) and Ford Motor Company. International Harvester indicated that, in anticipation of the recent strike against the nation's four largest tire manufacturers, it had accumulated an excess inventory of "pre-Standard 119 tires." IH stated that these tires meet the performance requirements of Standard No. 119 but not the labeling requirements. It petitioned for a six-month delay of the September 1, 1976, effective date of Standard No. 120's tire selection requirements, to permit the orderly depletion of this inventory.

Ford's petition focused on the difficulty, due to the strike, in obtaining in the near future sufficient quantities of tires that comply fully with Standard No. 119. Ford indicated that there are similar pre-Standard 119 tires available to it. It petitioned for an amendment to Standard No. 120 to permit the use of such insufficiently labeled tires.

The NHTSA believes that the approach suggested by Ford, because it will provide the necessary relief while preserving the required level of performance, is preferable to a simple delay of the September 1, 1976, effective date. Safety of performance of such tires or of vehicles equipped with them is thus not a major issue. The NHTSA has determined that, while granting the relief requested by these petitions may temporarily make enforcement by this agency

more difficult and may postpone the availability of certain tire labeling information to users of new vehicles subject to Standard No. 120, the avoidance of a serious disruption in the truck manufacturing process in this situation is appropriate and in the public interest. Accordingly, this notice adds a new section to Standard No. 120 that permits, for six months, the use of tires that are not properly labeled but otherwise meet all requirements of Standard No. 119.

In accordance with recently enunciated Department of Transportation policy encouraging adequate analysis of the consequences of regulatory action (41 FR 16200; April 16, 1976), the agency herewith summarizes its evaluation of the economic and other consequences of this action on the public and private sectors, including possible loss of safety benefits. This action imposes no new economic or environmental costs. It creates the benefit of avoidance of serious economic disruption. In light of this benefit and the fact that the required level of tire performance is preserved, any loss in safety benefits would be insignificant in this case.

Because of the imminent effective date of a requirement which would otherwise lead to serious economic disruption, the NHTSA for good cause finds that notice and public procedure on this amendment are impracticable and contrary to the public interest.

In consideration of the foregoing, 49 CFR 571.120 (Standard No. 120, Tire Selection and Rims for Motor Vehicles Other Than Passenger Cars) is amended by the addition of a new section. . . .

Effective date: August 27, 1976. Because this amendment relieves a restriction, it is found, for good cause shown, that an immediate effective date is in the public interest.

(Secs. 103, 112, 114, 119, 201, 202, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1401, 1403, 1407, 1421, 1422); delegation of authority at 49 CFR 1.50.)

Issued on August 27, 1976.

Robert L. Carter
Acting Administrator

41 F.R. 37115
September 2, 1976

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 120

Tire Selection and Rims for Motor Vehicles Other Than Passenger Cars

(Docket No. 71–19; Notice 6; Docket No. 75–32; Notice 2)

This notice responds to petitions for reconsideration of the newly established Standard No. 120, *Tire Selection and Rims for Motor Vehicles Other Than Passenger Cars*, by amendments to the standard in the areas of tire and rim selection, rim making, and tire label information. A minor amendment of Part 567, "Certification," is also made. In addition, the decision that the agency no longer regulates mobile structure trailers (mobile homes) is also set forth, along with appropriate conforming amendments of Standard No. 120, Standard No. 108, *Lamps, Reflective Devices, and Associated Equipment*, and § 571.3, *Definitions*, of Part 571.

Standard No. 120 (49 CFR 571.120) establishes that multipurpose passenger vehicles (MPV's), trucks, buses, motorcycles, and trailers shall be equipped with tires and rims that are adequate to support the fully loaded vehicle under contemplated operating conditions. The legislative history of the National Traffic and Motor Vehicle Safety Act (the Act) (15 U.S.C. 1381, et seq.) and § 202 of that Act establish Congress' concern that motor vehicles could be equipped with inadequate tires and that regulation would be necessary to protect against this problem:

> Sec. 202. In standards established under title I of this Act the Secretary shall require that each motor vehicle be equipped by the manufacturer or by the purchaser thereof at the time of the first purchase thereof in good faith for purposes other than resale with tires which meet the maximum permissible load standards when such vehicle is fully loaded with the maximum number of passengers it is designed to carry and a reasonable amount of luggage.

Standard No. 120 was promulgated January 19, 1976 (41 FR 3478, January 26, 1976), and 17 petitions for reconsideration of particular provisions were filed by vehicle, tire, and rim manufacturers, and by trade associations representing these manufacturers. In view of the length of time that has been taken to respond to these petitions for reconsideration, the effective dates for implementation of several of the standard's provisions were delayed (41 FR 18659, May 6, 1976) (41 FR 36657, August 31, 1976). The standard's basic provision for tire and rim selection (S5.1) was not delayed and became effective September 1, 1976.

Tire and rim selection. The primary effect of Standard No. 120 is fulfillment of § 202 of the Act by specification of the minimum load-carrying characteristics of tires on motor vehicles not already subject to the passenger car tire and rim selection requirements of Standard No. 110, *Tire Selection and Rims*, of Part 571. The rim selection requirements of the standard are limited (use of a rim designated as suitable by the tire manufacturer for use with its product; use of "DOT" labeled rims on and after September 1, 1979) in anticipation of more comprehensive regulation of rims as part of an upcoming wheel standard.

Tire selection consist of two elements: With one exception, each vehicle must be equipped with tires that comply with Standard No. 119, *New Pneumatic Tires for Vehicles Other Than Passenger Cars* (or Standard No. 109, *New Pneumatic Tires*), and the load rating of the tires on each axle of the vehicle must together at least equal the gross axle weight rating (GAWR) for that axle. The term GAWR is defined in § 571.3 of Part 571 as ". . . the value

specified by the vehicle manufacturer as the load-carrying capacity of a single axle system, as measured at the tire-ground interfaces." The GAWR concept formalizes the decision each manufacturer makes about the load-bearing ability of the tires, rims, axle, brakes, and suspension components (at a minimum) chosen to support and control the loaded vehicle.

The Truck Equipment Body Distributors Association (TEBDA) questioned the requirement that, with one exception, each vehicle subject to Standard No. 120 be equipped with tires that conform to Standard No. 119 (or Standard No. 109). TEBDA's March 17, 1976, letter concerned certification of trucks equipped for agricultural service with Goodyear "Terra-Tires." The "Terra-Tire" is one example of tires that are placed on specialized motor vehicles which operate both on and off the highway. The tires are specially designed and are unable to be certified to either of the tire performance standards.

Section S5.1.1 specifies that "each vehicle equipped with pneumatic tires for highway service shall be equipped with tires that meet the requirement of [the tire] standard[s]. . . ." This language is intended to exclude from the requirement for Standard 119 (or 109) tires of those vehicles which the manufacturer (or person later in the chain of distribution) decides to equip with tires other than "tires for highway service." The decision is left with the manufacturer at this time in view of the absence of data that demonstrates problems in the use of these tires that would justify their elimination. Any pattern of accident occurrence that points to unsafe utilization of non-highway service tires would presumably constitute a safety-related defect and could lead to revision of Standard No. 120 to regulate them. At this time, the answer to TEBDA is that the tire selection requirements of S5.1.1 (and S5.1.2 as a logical extension of S5.1.1) would not apply to a vehicle equipped with non-highway service tires. It is emphasized that this exclusion from Standard No. 120 bears no direct relationship to the determination of whether a particular vehicle qualifies as a "motor vehicle" as that term is defined in § 102(3) of the Act.

The second requirement for tire selection (S5.1.2) is that "[t]he sum of the maximum load ratings of the tires fitted to an axle shall be not less than the gross axle weight rating (GAWR) of the axle system. . . ." Comparable further specification exists when multiple ratings appear on the certification label, or the tires used on the vehicle are not listed on the certification label.

Because no petition directly raised objections to the requirements of S5.1.2, the agency first addresses issues raised in a separate and outstanding NHTSA proposal dealing with tire choice and its relationship to GAWR. The action (Definition of "Gross Axle Weight Rating," 40 FR 58152, December 15, 1975) proposed that the GAWR determination be based on, among other things, the vehicle's maximum attainable speed or the maximum load rating of the tire established by the tire manufacturer at 60 mph, whichever is lower. The proposed modification was intended to reflect the industry practice of assigning (in most cases) and labeling (in accordance with Standards 119 and 109) a tire's basic load-carrying capabilities in recognition of the unrestricted highway speeds to which it is normally exposed. This formalization of GAWR determination was intended to prevent manufacturers from assigning higher capabilities to tires than their 60-mph ratings, based on arbitrarily low speeds.

Most comments supported the GAWR proposal, although several truck manufacturers asked that the term "maximum attainable speed" be specifically defined as it is elsewhere in NHTSA regulations. Ford Motor Company opposed the proposed change in the definition of GAWR as an arbitrary selection of only one of the many criteria that enter into the determination of GAWR. The company suggested that other means exist to prevent assignment of arbitrary GAWR's based on tire ratings other than those established at 60 mph and so labeled on the tire sidewall.

The NHTSA agrees with Ford and notes that the "other means" to regulate this practice exist in the tire selection requirements of S5.1.2 of Standard No. 120. At the time of the GAWR proposal, Standard No. 120 had not been made final. Since its implementation on September 1,

1976, a manufacturer is free to determine GAWR as in the past, but the maximum load ratings (marked on the tire sidewall) of tires on the vehicle must be at least equal the GAWR listed. For this reason, the NHTSA's proposal for amendment of the GAWR definition is considered unnecessary and is therefore withdrawn. Further notice and opportunity for comment will precede any further action on the proposal set forth in that notice.

Several issues were raised in regard to the GAWR proposal that should be addressed for purposes of clarification. The Heavy & Specialized Carriers Conference of the American Trucking Associations (HSCC) cautioned the NHTSA against requiring an "unrestricted speed GAWR" on the Part 567 certification label in view of two State laws (or regulations) that no vehicle can operate on the state highways at gross vehicle weights greater than those listed on the vehicle in accordance with Federal regulations. It is common practice to load some "heavy hauler" vehicles to a gross vehicle weight that exceeds the unrestricted speed ratings of the vehicle tires, because the vehicle's tires are capable of carrying greater weight at reduced speeds.

As issued, Standard No. 120 required that the maximum load ratings of the tires at least equal the GAWR. This effectively limits the GVWR to the sum of these GAWR's (except in the case of semi-trailers). In the agency's view, however, the problem cited by HSCC can be avoided by listing additional GAWR's (calculated for reduced speed operation) at the end of the certification plate following the required data on the label. This practice has been followed by members of the Truck Trailer Manufacturers Association (TTMA) and was confirmed as permissible by the NHTSA in a March 5, 1975, letter to the TTMA. In order to aid resolution of issues that may arise between States that wish to refer to the certification label and operators that wish to continue the additional rating system, the agency hereby makes an interpretive amendment to Part 567 to specify where additional ratings may appear.

Based on this understanding of the relationship between choice of tires under S5.1.2 of Standard No. 120 and the determination of GAWR under § 567.4 of Part 567, a modification of the requirements of Standard No. 120 is justified. In the case of a vehicle that is incapable of the 60-mph speed used by tire manufacturers to establish the maximum load rating that is stamped on the tire sidewall (typically a powered vehicle and not a trailer), it would not be reasonable to require the GAWR's to be strictly limited to the sum of the maximum load ratings of the tires on the vehicle. This is because the vehicle will never achieve the speeds for which maximum load ratings were established. In many cases, provision is made to rate tires for a greater load at the lower (but maximum) speed of which a vehicle is capable. In recognition of this extremely limited specialized situation, the agency amends S5.1.2 to permit installation of tires with reduced speed capabilities in the case of vehicles whose maximum attainable speed is not greater than 50 mph. This amendment is considered to be a technical adjustment of language to fully implement the intent of the final rule as it was established. A separate amendment of § 571.3 is made to establish the basis for determination of a vehicle's maximum attainable speeds.

Volkswagen raised a separate issue concerning the requirement that the sum of maximum load ratings at least equal the GAWR of the axle system. This provision, in the case of an MPV, truck, bus, or trailer that is equipped with passenger car tires, requires that the maximum load ratings on the tires be reduced by approximately 10 percent before calculating the sum. The purpose of this 10-percent reduction in tire rating is to account for the generally harsher treatment (impulse and surge loading in the case of MPV's off-road) to which the tires of a vehicle other than a passenger car are exposed that is not accounted for in passenger car tire ratings. Volkswagen requested data showing that MPV's actually experience more abusive treatment in use.

The MPV category is based in part on the existence of characteristics that make these vehicles less amenable to passenger car standards. If Volkswagen has data indicating that the two categories actually experience identical usage, the NHTSA would prefer to adjust the defini-

tion to ensure that these vehicles are subject to all passenger car standards. Until that time, the existing rationale for excusing these vehicles from some passenger car standards dictates the use of higher strength tires.

As earlier noted, the rim selection requirements of Standard No. 120 are not substantial, consisting of a requirement that the rims be listed by the tire manufacturer as suitable for use with its tires, and a requirement that, on and after September 1, 1979, the rims used on a vehicle be labeled as specified in S5.2 of the standard. The September 1, 1979, date for use of labeled rims replaced a March 1, 1977, date that proved impractical in view of large inventories of unlabeled rims that exist and will exist long after rim labeling is begun. In establishing the later effective date, the agency noted that it was considering the possibility of eliminating this requirement entirely, to simplify the phase-in of properly marked rims as they become available. Experience with phase-in of newly regulated equipment in other areas such as tires and brake hoses has demonstrated that the requirement for labeled equipment on and after a particular date can create substantial inventory and potential economic waste problems. In view of experience that the delay of labeling requirements has not substantially impeded certification verification and defect actions, the NHTSA has decided to withdraw the requirement (that appears as the last sentence of S5.1.1). It is noted that withdrawal of this requirement does not affect the requirement of S5.1.2 that rims be listed as suitable by the tire manufacturer for use with the tires with which the vehicle is equipped, or the requirement of S5.2 that rims be labeled with specified information.

Mobile structure trailers. With regard to the applicability of this standard and other standards as a general matter, the NHTSA takes this opportunity to publish in the *Federal Register* its conclusion that enactment of the National Mobile Home Construction and Safety Standards Act of 1974 (42 U.S.C. 5401 et seq.) (the Mobile Home Act) impliedly repealed this agency's authority to regulate mobile homes. This conclusion was announced in a May 5, 1976, letter to the Department of Housing and Urban Development that stated in relevant part:

> The National Mobile Home Construction and Safety Standards Act of 1974 (42 U.S.C. 5401 et seq.) (the "Mobile Home Act") established within the Department of Housing and Urban Development a comprehensive program for the regulation of mobile homes. We have concluded that one result of that statute's enactment was the implied repeal of the NHTSA's authority with respect to mobile homes. Accordingly, we consider that the enactment has the effect of amending the Vehicle Safety Act's definition of "motor vehicle" to exclude "mobile homes" as the latter term is defined in the Mobile Home Act.

The effect of this conclusion is that tire and rim selection for mobile homes (known as "mobile structure trailers" by the NHTSA) is no longer subject to Standard No. 120 or other regulations issued under authority of the Act. For this reason, references to "mobile structure trailer" in Standard No. 120, Standard No. 108, *Lamps, Reflective Devices, and Associated Equipment*, and the general definitions section of Part 571 (§ 571.3) are deleted.

On the same subject, a May 25, 1976 (and supplementing July 7, 1976), letter from Firestone to the NHTSA asked whether tires manufactured exclusively for mobile homes and tires that are used on mobile homes (although manufactured for other uses) are subject to regulation under the Act. Similar questions were raised as to the status of rims, some of which are designed exclusively for use on mobile homes and some of which are used on mobile homes and other vehicles.

As for tires, Standard No. 109 applies to "tires for use on passenger cars" and Standard No. 119 applies to "tires designed for highway use on [specified motor vehicles]." By these terms, neither standard applies to tires designed exclusively for use on mobile homes. In the case of tires actually used on mobile homes but designed for use also on vehicles subject to the Act, the agency considers such tires to be subject

to the standards' requirements because they constitute motor vehicle equipment as that term is defined in § 102(4) of the Act.

As for rims, Standard No. 110 contains specifications only for rims that equip passenger cars and therefore contains no requirements that would directly require performance of a rim that was installed on a mobile home. Standard No. 120 applies to rims "for use on" MPV's, trucks, buses, motorcycles, and trailers (other than mobile structure trailers) and therefore would not apply to rims designed exclusively for use on mobile homes. In the case of rims designed for use on any of the motor vehcile types listed, the NHTSA would consider Standard No. 120's requirements applicable, and labeling in accordance with S5.2 would be required.

Rim marking. The second requirement of Standard No. 120 is an equipment requirement specifying five items of information (six in the case of multipiece wheels) that must appear on any rim for use on MPV's, trucks, buses, trailers, or motorcycles. The requirements for location of the information varies according to the type of information and whether the rim is part of a single or multipiece wheel. In answer to a question raised by Kelsey-Hayes and Motor Wheel, it is confirmed that these marking requirements have no bearing on the use of the rim on passenger cars, except as future labeling requirements in Standard No. 110 might prohibit one or more of the items required by S5.2. This eventuality is considered to be extremely unlikely.

Based on a comprehensive review of the petitions for reconsideration, the agency has decided that some requested modifications in labeling requirements are justified. The Japanese Automobile Manufacturers Association and Suzuki asked that required labeling be permitted to be embossed as well as impressed on the rim. Volkswagen (and representatives from Motor Wheel and Goodyear in a February 4, 1976, meeting with the NHTSA) asked that rim labeling be permitted on the disc portion of a single-piece wheel. The agency considers these suggestions to constitute justifiable options that would not diminish the level of motor vehicle safety represented by the standard, and the standard is accordingly amended.

Motor Wheel requested amendment of the standard to state that labeling of multipiece rims is permitted in the bolt hold area. The agency does not consider the addition of advisory information to be a desirable drafting practice because the mention of bolt hole locations would imply that some restriction on location exists when in fact it does not. In answer to another question from Motor Wheel, more than one "rim type designation" on rim components of a multipiece wheel is permitted by the standard.

Motor Wheel and Goodyear also asked if numbers that contain decimals or "trailing zeroes" e.g., 7.50) could be shortened by deleting the decimal and "trailing zero." The agency believes that abbreviation by dropping the zero will not be confusing and amends the standard to include an example of such abbreviation. Confusion would result from dropping the decimal.

In response to a request by Motor Wheel and Budd Company for a specific provision in S5.1.2 that the marking requirements only apply to newly manufactured wheels, the agency notes the general applicability statement in § 571.7, governing the applicability of all standards found in Part 571, states that ". . . each standard set forth in subpart B of this part applies according to its terms to all motor vehicles or items of motor vehicle equipment the manufacture of which is completed on or after the effective date of the standard." Thus, the standard only applies to rims manufactured on or after the effective date of S5.2.

Manufacturers asked for several revisions of the marking requirements which the agency has considered and concludes are unjustified. This discussion treats the requests in the order that the markings in question appear in S5.2.

With regard to the requirement for marking with a designation that indicates the source of the rim's published dimensions (S5.2(a)), Daido Corporation asked whether the Japanese Industrial Standards' symbol (a stylized combination of the letters J, I, and S) or the letters "JIS" would meet the requirements of S5.2(a)(3) for use of letter "J." The agency interprets its labeling requirements as strictly as any other portion of its requirements and concludes that

neither "JIS" nor the JIS symbol would conform to the requirement of S5.2(a)(3). In response to a similar request by Volkswagen to permit "DIN" in place of "D," the agency has considered the idea of permitting the manufacturer the option of a choice of designations, and concludes they are undesirable in the interests of maintaining uniformity and comprehension.

Grove Manufacturing suggested that the single letter designations of "D" and "E" could be mistaken for the load ranges that appear on tires and on the certification label. The agency concludes that the designations on the rim are sufficiently separated to preclude confusion and therefore the recommendation by Grove is not undertaken.

The "rim size designation" required by S5.2(b) is defined in S4 to mean the rim diameter and width. Daido and Volkswagen asked that a width designation followed by a diameter designation be considered as satisfying the requirement for designation of diameter and width. The agency specified the existing order to distinguish rim designations from tire designations. This order of information is being considered as the uniform practice to be adopted by the International Standards Organization. For reasons of uniformity, the requests are denied.

Volkswagen asked that the "DIN" symbol be permitted to signify compilance of the rim with Standard No. 120 in place of the "DOT" symbol required by S5.2(c) for this purpose. The agency does not find that the requirement of § 114 of the Act for certification is satisfied by use of a designation that has a wholly different meaning. Volkswagen's request is therefore denied.

Certification label. The third requirement of Standard No. 120 is that information about suitable tires and rims for use on the vehicles, along with appropriate inflation pressure and speed restriction information, be placed on a label on the vehicle (S5.3). As amended April 29, 1976 (41 FR 18659, May 6, 1976), the standard requires that the information appear on the certification labels of vehicles manufactured on or after September 1, 1977.

Some manufacturers and the Truck Trailer Manufacturers Association (TTMA) objected to the provision of this information on grounds that valid information already appears on the tires and rims that equip the vehicle, and that the information could mislead a person to think that only the listed tires and rims could be used on the vehicle. With regard to the first objection, the NHTSA disagrees and notes that an improper choice of tires or rims (as could occur by replacing original equipment with "custom" rims or the equivalent in tires) could permanently mislead vehicle owners as to the suitable selection of tires and rims. As for the possibility of misleading, the agency believes that a heading over the tire-rim listings (specifically, "SUITABLE TIRE-RIM CHOICE") can be added to the requirements for optional use by a manufacturer who believes the information would be otherwise misleading. With regard to General Motors' note that an owner should be guided by all available information on tire choice (e.g., information in the owner's manual), the agency notes its longstanding position that manufacturers may add statements referring the reader to other publications for additional information.

It is apparent from the examples cited by manufacturers that the decision to place all required data on the certification label could prove cumbersome in some cases, particularly those involving a heavy truck with several available axle combinations. In view of these problems, the agency has decided to remove the restriction on location and permit the information to appear on the certification label or on a separate label that conforms to the requirements for certification labels. The NHTSA notes that this option to provide information on a separate label responds to concern of the Truck Body and Equipment Association (TBEA) for the responsibilities of its final-stage manufacturing membership. The agency does not believe the tire and rim information would be as useful in a location entirely separate from the certification label, and it therefore declines to adopt General Motors' suggestion to use the Vehcile Identification label.

Motorcycle manufacturers and General Motors pointed out that the requirements for listing tire and rim information after GVWR in the case of vehicles such as motorcycles, that only utilize one GVWR listing, is redundant and therefore wasteful of space. Other manufacturers suggested that the tire-rim information was redundant in the case of multiple GVWR listings, although this is not the case because of the need to associate the appropriate GVWR with GAWR's that may exceed the GVWR. In any event, these comments suggest that GVWR and GAWR could be better linked by revision of the example format to reduce the amount of information that must be listed. The solution is to permit listing of the GVWR alone, followed immediately by corresponding GAWR's and appropriate tire-rim information. The clearer format would be used for single and multiple listings. This revision is described in the new example that accompanies the rule changes at the end of this notice. In conformity with this simplification, the rule is also amended to delete the requirements for GVWR tire-rim-inflation listings. Depending on manufacturers' reactions to the simplified format, a similar change could be undertaken for the passenger car example found in Part 567 (§ 567.4(h)(1)).

With regard to the items of information that must be listed in accordance with S5.3, General Motors and the TTMA argued that "tires . . . appropriate *as a minimum* for the GAWR" [emphasis added] could be construed to require tires with load ratings less than those that the manufacturer would choose to recommend. To eliminate any ambiguity, the agency replaces "at a minimum" with "as specified by S5.1.2."

Suzuki asked whether "cold inflation pressure" means the maximum inflation pressure specified by the tire manufacturer. The TTMA also asked for clarification on this point. The answer is that the requirement does not call for maximum pressure, but the pressure specified by the tire manufacturer as sufficient to carry the load specified by the vehicle manufacturer as the tire's share of the assigned GAWR.

Michelin Tire Corporation noted that listing inflation pressure could be misleading in the case of tire designations that call for different inflation pressures depending on the tire construction. It is the agency's view that any possibility of confusion can easily be avoided by an indication that the tire designation represents a radial tire, so that a person substituting a non-radial tire size with the same designation is aware that the two tires are not identical.

The TBEA requested clarification of the term "maximum speed" as it appeared in the example that accompanied the final rule. The TBEA appeared to misunderstand the example as a reference to the speed capabilities of the vehicle instead of the speed restriction of the tires. The agency has in mind only the rare tire types constructed for transit buses and mining and logging operations and so designated. Goodyear and the TTMA appeared to have the same mistaken impression of the requirement.

Speed-restricted vehicles have now been addressed under S5.1.2. In view of the confusion that arose over the requirement, and the agency's assumption that the users of these tires are knowledgeable in the use of the tires, it has been decided to drop the requirement of S5.3(d) altogether.

The TTMA raised several other questions with regard to the information that appears along with the GAWR. In answer to these questions, the effective dates of the standard are such that the manufacturer will be required to list the information specified by S5.3 on and after September 1, 1977. Also, it is not permissible to "bracket" the GVWR and GAWR values for a particular vehicle by specifying the minimum and maximum values that any tire-rim choice could provide. Section 567.4 of Part 567 requires that the GVWR and GAWR's representing the manufacturer determination of the particular vehicle's characteristics must be listed.

The standard does not require the information specified in S5.3 to be listed alongside the additional GVWR's and GAWR's that a manufacturer might list at the end of its certification label as reduced speed ratings. Lastly, the agency does not agree that the GAWR ratings for a semi-trailer are not related to the trailer's GVWR. While the trailer's axles do not support the entire weight of the vehicle, it is still the case that the various GVWR's that could be assigned to a semi-trailer are affected by the

GAWR values that can be assigned, and that the GVWR probably differs depending on the GAWR value assigned. In this sense the GAWR's assigned to a semitrailer's axles do "correspond" to its GVWR.

In accordance with Department of Transportation policy encouraging adequate analysis of the consequences of regulatory action (41 FR 16200, April 16, 1976), the agency herewith summarizes its evaluation of the economic and other consequences of this action on the public and private sectors, including possible loss of safety benefits. The new options, simplification, and reduction of marking and labeling requirements should make compliance with the standard less costly, while the changes are not expected to significantly reduce the level of motor vehicle safety. The exception for speed-restricted vehicles provided in S5.1.2 represents a correction of the requirements to reflect the agency's intent not to prevent the assignment of greater load-carrying capabilities to vehicles at lower speeds. Permitting this practice to continue will result in the avoidance of new costs in the economy.

In consideration of the postponement of effective dates already granted for rim marking and the tire information labeling, the agency concludes that the present effective date schedule permits adequate time for compliance.

In view of the three notices that have modified the test of Standard No. 120, the entire standard (incorporating the amendments made by this notice) is published for the convenience of persons affected.

In consideration of the foregoing, Chapter V of Title 49, Code of Federal Regulations, is amended. . . .

Effective date: Changes to the text of the *Federal Register* may be made immediately. The provisions of Standard No. 120 are in effect at this time, except as otherwise provided in the standard.

(Sec. 103, 119, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.50.)

Issued on January 28, 1977.

John W. Snow
Administrator

42 F.R. 7140
February 7, 1977

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 120

Tire Selection and Rims for Motor Vehicles Other Than Passenger Cars (Docket No. 80-16; Notice 2)

ACTION: Final rules.

SUMMARY: This rule makes several minor interpretive and editorial changes to Federal Motor Vehicle Safety Standard No. 120, *Tire Selection and Rims for Motor Vehicles Other Than Passenger Cars.* With respect to the tire and rim selection information required to appear on a placard in new vehicles, the rule requires that the lettering be of specified dimensions and that the information be written in the English language. The rule also incorporates the substance of an existing interpretation of this standard permitting the purchaser of a new vehicle to request the vehicle manufacturer to install the purchaser's retread tires on the vehicle; changes one of the rim labeling examples listed in the standard; and corrects the names of two tire standardization organizations listed in the standard.

EFFECTIVE DATE: December 1, 1984.

SUPPLEMENTARY INFORMATION: Federal Motor Vehicle Safety Standard No. 120, *Tire Selection and Rims for Motor Vehicles Other Than Passenger Cars* (49 CFR § 571.120), specifies tire and rim selection requirements and rim marking requirements for motor vehicles such as trucks, buses, and motorcycles. (Throughout the balance of this preamble, the term "motor vehicles" is used to refer to all types of motor vehicles other than passenger cars.)

Standard 120 was initially published at 41 FR 3478, January 23, 1976. In the course of reviewing this standard, NHTSA noted that some portions of the standards contained minor errors and other portions needed clarification. To correct these shortcomings, NHTSA published a Notice of Proposed Rulemaking (NPRM) at 45 FR 71834, October 30, 1980.

The NPRM proposed changes in the following four areas of the standard:

(1) Requiring the tire and rim selection information which must appear on a placard in the vehicle to be in the English language and of specified dimensions;

(2) Narrowing the provision permitting the purchaser of a new vehicle to have the manufacturer install the purchaser's used tires on the new vehicle, and incorporating the results of an existing interpretation to permit the use of retreaded tires in the same circumstances as used tires;

(3) Changing one of the rim labeling examples listed in the standard; and

(4) Correcting the names of two tire standardization organization listed in the standard.

NHTSA received 13 comments on the NPRM. One comment addressed the first proposed change, stating that there were no objections to the proposed change, if it would permit the use of multilingual labels on vehicles with one of the labels in English and of the specified dimensions. NHTSA generally permits the use of multilingual labels, as long as one part of the label clearly shows the required information in the proper format and in the English language. No change is contemplated in this policy. No other comments were received on this proposed change to the standard, and it is adopted as proposed.

All of the other 12 comments received by the agency opposed the portion of the second proposed change which would limit the use of used and retreaded tires on new vehicles to mileage contract purchasers. (A mileage contract purchaser is a purchaser whose vehicles are equipped with tires purchased or leased from a tire supplier on a cost per mile basis). In the NPRM, the agency stated that this limitation had been implicit in the final rule

establishing Standard 120 and that, absent this limitation, "the purchaser could send the vehicle manufacturer palpably unsafe tires (e.g., bald tires or poorly repaired cut tires) and request that these tires be mounted on the new vehicle."

The commenters argued that, regardless of the original intent of the agency when the standard was issued in 1976, the practice since that time has been for almost all vehicle fleets to send tires from their tire banks (tire banks are composed of tires with usable tread left on them which have been taken off vehicles no longer in service) to the vehicle manufacturer for installation on any new vehicles they buy. It was asserted that the proposed language amending Standard 120 would prohibit this practice and increase costs for these vehicle fleets, without any data suggesting that there is a safety problem associated with this practice. Most of the commenters stated that the proposed prohibition was unnecessary since it would not make any sense for a vehicle purchaser to spend $65,000 to $75,000 on a new vehicle, and then install unsafe tires on that vehicle. Further, one commenter noted that the agency's proposal would not prevent a purchaser who wanted to install unsafe tires on a vehicle from doing so. This commenter correctly noted that Standard 120 does not require that new vehicles be equipped with tires. Hence, according to this commenter, a purchaser would simply order a new vehicle delivered without any tires, and then install the unsafet tires on the truck after it was delivered.

NHTSA is persuaded by these comments, and is not adopting the proposed limitation. This rule does amend the standard to permit the installation of retreaded tires on new vehicles, as proposed in the NPRM. All commenters who addressed this change supported it. Further, the practice of using retread tires on new vehicles has been permitted since the agency's issuance in 1978 of an interpretation of Standard 120.

One change has been made to the language proposed in the NPRM to permit retreaded tires to be mounted on new vehicles. The NPRM would have required that retreaded tires to be mounted on new vehicles have a DOT symbol on the tire, to show that the originl casing was manufactured in compliance with Standard 119. That standard sets forth performance and labeling requirements for new vehicle tires. However, such a requirement would directly contradict another NHTSA requirement in 49 CFR Part 574, *Tire Identification and Recordkeeping.* Section 574.5 states, "The DOT symbol shall not appear on tires to which no Federal Motor Vehicle Safety Standard is applicable..." No Federal motor vehicle safety standard is applicable to retreaded vehicle tires. Hence, adopting the proposed requirement would either necessitate amending section 574.5 or force retreaders to violate one of these two requirements dealing with the presence of a DOT symbol on these tires.

The agency has decided not to require that retreaded tire mounted on new vehicles bear the DOT symbol placed on the tires by their original manufactures. Further, the agency is publishing in today's *Federal Register* a proposal to amend section 574.5 to permit retreaders of tires for use on motor vehicles other than passenger cars either to leave the DOT symbol on the tires or to remove the symbol. The agency has tentatively concluded that continuing to require the removal of the symbol does not serve any safety purpose. As the proposal notes, the value of the DOT symbol on a retreaded tire in assessing the probable performance of the tire is believed by the agency to be very significant. Intervening factors such as latent problems with the carcass of the original tire, inadvertent damage to the carcass during the retreading process, the amount of old tread are of far greater significance in determining the performance of the retreaded tire than the condition of the carcass when the tire was new.

No comments were received on the agency's third and fourth proposed changes, which are minor editorial corrections. These are adopted herein as proposed.

NHTSA has analyzed the impacts of this action and determined that they are not "major" within meaning of Executive Order 12291 or "significant" within the meaning of the Department of Transportation regulatory policies and procedures. The principal impacts of this rule are to clarify some portions of the standard, and to explicitly authorize existing industry practices, which have been permitted by an interpretation of the standard. There will be no additional paperwork or costs imposed on vehicle manufacturers, tire manufacturers, or the public as a result of this rule. There will be no cost savings either, since the rule merely authorizes existing practices. Accordingly, a full regulatory evaluation has not been prepared.

The Regulatory Flexibility Act is not applicable to this rule, because that Act applies only to rulemaking proceedings in which the NPRM was issued on or after January 1, 1981. The NPRM in this action was issued in October 1980. If that Act were applicable, NHTSA would certify that this rule will not "have a significant economic impact on a substantial number of small entities" and state that a Regulatory Flexibility Analysis was therefore not required. This rule will simply clarify existing requirements without any economic impacts on small entities.

Issued on May 11.

49 F.R. 20822
May 17, 1984

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 120

New Pneumatic Tires for Vehicles Other Than Passenger Cars
(Docket No. 89-14; Notice 1)
RIN: 2127-AD20

ACTION: Technical Amendment.

SUMMARY: In response to a petition by the Tyre and Rim Association of Australia (TRAA), this notice amends Standard No. 109, Standard No. 119, and Standard No. 120 to include the TRAA in the list of standardization organizations. In addition, this notice corrects an oversight in an earlier technical amendment. Because these changes represent only technical corrections to the agency's listing of recognized standardization organizations and impose no obligations on any party, the agency finds for good cause that notice and opportunity for comment are unnecessary.

EFFECTIVE DATE: September 18, 1989.

SUPPLEMENTARY INFORMATION: Section S4.4.1(b) of Standard No. 109, *New Pneumatic Tires — Passenger Cars* and section S5.1(b) of Standard No. 119 (49 CFR 571.109), *New Pneumatic Tires for Motor Vehicles Other Than Passenger Cars* (49 CFR 571.119) each contain listings of various standardization organizations. Similarly, section S5.2(a) of Standard No. 120, *Tire Selection and Rims for Motor Vehicles Other Than Passenger Cars*, sets forth rim marking symbols related to the standardization organizations. A standardization organization is a voluntary association composed of representatives of member tire companies. The purpose of a standardization organization is to establish and promulgate engineering standards for tires, rims, and their allied parts. NHTSA relies on standardization organizations to list acceptable rim sizes for each tire size and for technical information regarding tire sizes.

The Tyre and Rim Association of Australia (TRAA) submitted a petition to NHTSA requesting that it be included in NHTSA's listing of standardization organizations in Standard No. 109 and Standard No. 119. TRAA also submitted its Articles of Incorporation.

NHTSA has decided to grant the petition and adopt the petitioner's request without affording an opportunity for public comment because these changes represent only technical corrections to the agency's listing of recognized standardization organizations. They impose no obligations on any party. Rather, they accommodate the wishes of the listed organization. Accordingly, the agency finds for good cause that notice and opportunity for comment are unnecessary, and these changes are effective as soon as this notice is published.

In addition, on June 6, 1983, NHTSA issued a similar technical amendment which intended to eliminate from the list of standardization organizations the Society of Motor Manufacturers & Traders Ltd. (SMMT) (48 FR 25209). It has come to the agency's attention that the 1983 notice deleted only some of the references to SMMT. That notice failed to delete references to SMMT in Appendix A, paragraph 4 of Standard No. 109 and section 5.2(a) of Standard No. 120. This notice eliminates these references. Because these technical corrections impose no obligations on any party, the agency finds for good cause that notice and opportunity for comment are unnecessary.

1. In consideration of the foregoing, section S4.4.1(b) of 49 CFR §571.109 is revised to read as follows:

(b) Contained in publications, current at the date of manufacture of the tire or any later date, of at least one of the following organizations:
The Tire and Rim Association
The European Tyre and Rim Technical Organisation
Japan Automobile Tire Manufacturers' Association, Inc.
Deutsche Industrie Norm
British Standards Institution
Scandinavian Tire and Rim Organization
The Tyre and Rim Association of Australia
* * * * *

2. Appendix A, paragraph 4 of 49 CFR § 571.109 is revised to read as follows:

4. A statement as to whether the tire size designation and load inflation schedule has been coordinated with the Tire and Rim Association, the European Tyre and Rim Technical Organisation, the Japan Automobile Tire Manufacturers' Association, Inc., the Deutsche Industrie Norm, the British Standards Institution, the Scandinavian Tire and Rim Organization, and the Tyre and Rim Association of Australia.
* * * * *

3. Section S 5.1(b) of 49 CFR § 571.119 is revised to read as follows:
* * * * *

(b) Contained in publications, current at the date of manufacture of the tire or any later date, of at least one of the following organizations:
The Tire and Rim Association
The European Tyre and Rim Technical Organisation
Japan Automobile Tire Manufacturers' Association, Inc.
Deutsche Industrie Norm
British Standards Institution
Scandinavian Tire and Rim Organization
The Tyre and Rim Association of Australia
* * * * *

4. Section S5.2(a) of 49 CFR § 571.120 is revised to read as follows:
* * * * *

(a) A designation which indicates the source of the rim's published nominal dimensions, as follows:
(1) "T" indicates The Tire and Rim Association.
(2) "E" indicates The European Tyre and Rim Technical Organisation
(3) "J" indicates Japan Automobile Tire Manufacturers' Association, Inc.
(4) "D" indicates Deutsche Industrie Norm.
(5) "B" indicates British Standards Institution.
(6) "S" indicates Scandinavian Tire and Rim Organization.
(7) "A" indicates The Tyre and Rim Association of Australia.
(8) "N" indicates an independent listing pursuant to S4.4.1(a) of Standard No. 109 or S5.1(a) of Standard No. 119.
* * * * *

Issued on: September 12, 1989

Jeffrey R. Miller
Acting Administrator

54 F.R. 38385
September 18, 1989

MOTOR VEHICLE SAFETY STANDARD NO. 120

Tire Selection and Rims for Motor Vehicles Other Than Passenger Cars

S1. Scope. This standard specifies tire and rim selection requirements and rim marking requirements.

S2. Purpose. The purpose of this standard is to provide safe operational performance by ensuring that vehicles to which it applies are equipped with tires of adequate size and load rating and with rims of appropriate size and type designation.

S3. Application. This standard applies to multipurpose passenger vehicles, trucks, buses, trailers, and motorcycles, and to rims for use on those vehicles.

S4. Definitions. All terms defined in the Act and the rules and standards issued under its authority are used as defined therein.

"Rim base" means the portion of a rim remaining after removal of all split or continuous rim flanges, side rings, and locking rings that can be detached from the rim.

"Rim size designation" means rim diameter and width.

"Rim diameter" means nominal diameter of the bead seat.

"Rim width" means nominal distance between rim flanges.

"Rim type designation" means the industry or manufacturer's designation for a rim by style or code.

"Weather side" means the surface area of the rim not covered by the inflated tire.

S5. Requirements.

S5.1 Tire and rim selection.

S5.1.1 Except as specified in S5.1.3, each vehicle equipped with pneumatic tires for highway service shall be equipped with tires that meet the requirements of Standard No. 109 (§ 571.109) or Standard No. 119 (§ 571.119), and with rims that are listed by the manufacturer of the tires as suitable for use with those tires, in accordance with S4.4 of Standard No. 109 or S5.1 of Standard No. 119, as applicable.

S5.1.2 Except in the case of a vehicle which has a speed attainable in 2 miles of 50 mph or less, the sum of the maximum load ratings of the tires fitted to an axle shall be not less than the gross axle weight rating (GAWR) of the axle system as specified on the vehicle's certification label required by 49 CFR Part 567. If the certification label shows more than on GAWR for the axle system, the sum shall be not less than the GAWR corresponding to the size designation of the tires fitted to the axle. If the size designation of the tires fitted to the axle does not appear on the certification label, the sum shall be not less than the lowest GAWR appearing on the label. When a tire listed in Appendix A of Standard No. 109 is installed on a multipurpose passenger vehicle, truck, bus, or trailer, the tire's load rating shall be reduced by dividing by 1.10 before calculating the sum.

S5.1.3 [In place of tires that meet the requirements of Standard No. 119, a truck, bus, or trailer may at the request of a purchaser be equipped at the place of manufacture of the vehicle with retreaded or used tires owned or leased by the purchaser, if the sum of the maximum load ratings meets the requirements of S5.1.2. Used tires employed under this provision must have been originally manufactured to comply with Standard No. 119, as evidenced by the DOT symbol. (49 F.R. 20822—May 17, 1984. Effective: December 1, 1984)]

S5.2 Rim marking. On and after August 1, 1977, each rim or, at the option of the manufacturer in the case of a singlepiece wheel, wheel disc shall be marked with the information listed in paragraphs (a) through (e), in lettering not less than one-eighth inch high, impressed to a depth or, at the option of the manufacturer, embossed to a height of not less than 0.005 inch. The information listed in paragraphs (a) through (c) shall appear on the weather side. In the case of rims of multipiece construction, the information listed in paragraphs (a) through (e) shall appear on the rim base and the information listed in paragraphs (b) and (d) shall also appear on each part of the rim.

(a) A designation which indicates the source of the rim's published nominal dimensions, as follows:

[(1) "T" indicates The Tire and Rim Association.

(2) "E" indicates The European Tyre and Rim Technical Organisation.

(3) "J" indicates Japan Automobile Tire Manufacturers Association, Inc.

(4) "D" indicates Deutsche Industrie Norm.

(5) "B" indicates British Standards Institution.

(6) "S" indicates Scandinavian Tire and Rim Organization.

(7) "A" indicates The Tyre and Rim Association of Australia.

(8) "N" indicates an independent listing pursuant to S4.4.1(a) of Standard No. 109 or S5.1(a) of Standard No. 119.

(54 F.R. 38385—September 18, 1989. Effective: September 18, 1989)]

(b) The rim size designation, and, in case of multipiece rims, the rim type designation. For example: 20 × 5.50, or 20 × 5.5.

(c) The symbol DOT, constituting a certification by the manufacturer of the rim that the rim complies with all applicable motor vehicle safety standards.

(d) A designation that identifies the manufacturer of the rim by name, trademark, or symbol.

(e) The month, day, and year, or the month and year, of manufacture, expressed in numerals. For example,

"September 4, 1976" may be expressed as:

$$90476, \quad \frac{904}{76} \quad \text{or} \quad \frac{76}{904}$$

"September 1976" may be expressed as:

$$976, \quad \frac{9}{76} \quad \text{or} \quad \frac{76}{9}$$

S5.3 Label information. (For vehicles manufactured on and after September 1, 1977) The information specified in S5.3.1 through S5.3.3 shall, in the format set forth following this section, appear either—

(a) After each GAWR listed on the certification label required by § 567.4 or § 567.5 of this chapter, or at the option of the manufacturer,

(b) On a tire information label affixed to the vehicle in the manner, location, and form described in § 567.4(b) through (f) of Part 567 of this chapter, as appropriate for each GVWR-GAWR combination listed on the certification label.

S5.3.1 Vehicles manufactured before December 1, 1984. Each vehicle manufactured before December 1, 1984, shall show the information specified in S5.3.3 through S5.3.5 in the format set forth following this section. The information shall appear either—

(a) After each GAWR listed on the certification label required by § 567.4 or § 567.5 of this chapter; or, at the option of the manufacturer,

(b) On a tire information label affixed to the vehicle in the manner, location, and form described in § 567.4(b) through (f) of this chapter, as appropriate for each GVWR-GAWR combination listed on the certification label.

S5.3.2 Vehicles manufactured on and after December 1, 1984. Each vehicle manufactured on and after December 1, 1984 shall show the information specified in S5.3.3 through S5.3.5 in the English language, lettered in block capitals and numerals not less than three thirty-seconds of an inch high and in the format set forth following this section. This information shall appear either—

(a) After each GAWR listed on the certification label required by § 567.4 or § 567.5 of this chapter; or, at the option of the manufacturer,

(b) On a tire information label affixed to the vehicle in the manner, location, and form described in § 567.4(b) through (f) of this chapter, as appropriate for each GVWR-GAWR combination listed on the certification label.

S5.3.3 The size designation of tires (not necessarily those on the vehicle) appropriate (as specified in S5.1.2) for the GAWR.

S5.3.4 The size designation and, if applicable, the type designation of rims (not necessarily those on the vehicle) appropriate for those tires.

S5.3.5 Cold inflation pressure for those tires.

Truck example

Suitable Tire—Rim Choice

GVWR: 17280

GAWR: Front—6280 with 7.50—20(D) tires, 20x6.00 rims, at 75 psi cold single.

GAWR: Rear—11000 with 7.50—20(D) tires, 20x6.00 rims, at 65 psi cold dual.

GVWR: 17340

GAWR: Front—6300 with 7.00—20(E) tires, 20x5.50 rims, at 90 psi cold single.

GAWR: Rear—11040 with 7.00—20(E) tires, 20x5.50 rims, at 80 psi cold dual.

S6. Vehicles manufactured from September 1, 1976, to February 28, 1977. Notwithstanding any other provision of this standard, a vehicle to which this standard applies that is manufactured during the period from September 1, 1976, to February 28, 1977, shall meet each requirement of this standard, with the following exception: In place of tires that meet Standard No. 119 (§ 571.119), the vehicle may be equipped with tires that meet every requirement of that standard other than the tire marking requirements of S6.5 of that standard.

41 F.R. 3478
January 23, 1976

PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems—Trucks, Buses and Trailers

(Docket Nos. 70–16, 70–17; Notice No. 2)

The purpose of this notice is to amend § 571.21 of Title 49, Code of Federal Regulations, by adding Motor Vehicle Safety Standard No. 121, Air Brake Systems—Trucks, Buses and Trailers. Notices of proposed rulemaking on this subject were published on June 25, 1970 (35 F.R. 10368) and June 26, 1970 (35 F.R. 10456). The comments received in response to the notices and information obtained at a technical conference held on October 20, 1970 (35 F.R. 14736, September 22, 1970) have been considered in the development of the final rule. The trailer requirements are joined with the truck and bus requirements in a single air brake systems standard.

The standard as adopted specifies requirements for the safe performance of air brake systems under normal and emergency conditions. It should be noted that the term "air brake system" as defined in the standard applies to the brake configuration commonly referred to as "air over hydraulic," in which failure of either medium can result in complete loss of braking ability.

The standard establishes a set of requirements to govern the braking behavior of a vehicle during application of the service brakes. Principal among these are stopping performance requirements that include a minimum stopping distance requirement for trucks and buses and lateral stability and wheel lockup requirements for all vehicles. To more accurately reflect the friction characteristics of a surface with a skid number of 75, the stopping distances for trucks and buses on a dry surface have been increased over those proposed in the notice. The required distance from 60 m.p.h. is now 245 feet rather than 216 feet and the distance from 20 m.p.h. is 33 feet rather than 29 feet. The stopping distance on a wet surface at 20 m.p.h., 54 feet, has been retained. Several comments indicated that there are no test facilities on which the 60 m.p.h. stop on a wet surface can be safely conducted. As a measure of brake efficiency, moreover, the 20 m.p.h. stop on a wet surface satisfactorily indicates the vehicle's behavior at higher speeds, and the standard therefore specifies only the 20 m.p.h. stopping distance test.

The requirement that the vehicle stay within a 12-foot-wide lane has been adopted as proposed. The proposed requirement that no wheel lock except momentarily has been modified to permit lockup to occur on the leading nonsteerable axle on vehicles having more than two nonsteerable axles. A review of available information indicates that satisfactory control of the vehicle can be maintained if lockup is avoided on two nonsteerable axles. The rule also permits lockup at speeds under 10 m.p.h. Such low speed lockup is not considered hazardous and allows greater flexibility in brake system designs.

Some comments stated that the requirement for a controlled stop without lockup favored one variety of stability-controlling device—the antilock device—over other systems such as load proportioning devices. Several comments seemed to assume that the proposal required antilock devices. The requirement that the vehicle stop without locking its wheels reflects the Administration's judgment that a vehicle with locked wheels, whatever its equipment, is unstable and uncontrollable in an emergency situation. The Administration recognizes the likelihood that manufacturers of some types of vehicles may have to incorporate proportioning or antilock devices into their systems in order to meet the stopping distance requirement. However, the manner in which lockup is prevented is not specified in the standard, and if a proportioning

device or any other device can produce the desired result, it may be incorporated into the vehicle's braking system.

Although an antilock device is not required, if it is used on a vehicle it must conform to several requirements. A warning signal must be provided to warn of total system failure, a failed device must not interfere with the operation of the service brake, and electrical elements in the system must be powered through the vehicle's stop lamp circuit. Of these requirements, the first was the subject of comments that indicated some uncertainty as to the nature of a total system failure. The reason for the requirement is that a driver ought to be warned in the event that a system on which he has come to rely has stopped working altogether. Monitoring of each device separately would be difficult and costly, while monitoring of the shared elements of the system, such as the electrical circuitry, would be relatively simple. Although electrical problems would be the most likely cause of total failure, other components may also produce such failure and the language of the requirement has not been limited to a specific type of failure. A requirement that electrical power for antiskid devices on trailers must be provided through the stop lamp circuit has been added to insure the functioning of antilock systems in vehicle combinations in which the towed vehicle has an antilock system.

The requirements for actuation and release times, for brake retardation force, and for brake power have been modified somewhat in the light of information provided by the comments. The notice proposed timing curves for brake actuation and release, but subsequent review has indicated that adhesion to a timing curve is less significant than the basic ability to apply and release the brakes quickly. The curves have therefore been omitted in favor of a single application time of 0.25 second and a single release time of 0.50 second. These values are somewhat less stringent than those proposed in the notice, and reflect the judgment that a system that can meet the stopping distance requirements without lockup has less need for the rapid times originally proposed. Vehicles intended to tow other vehicles equipped with air brakes must still meet the actuation and release times with a 50-cubic-inch test reservoir attached to the service line outlet, but the requirements for pressurization of the test reservoir itself have been deleted.

The brake retardation force requirement was the subject of numerous comments, some to the effect that the retardation force was too high to permit safe operation of vehicle combinations in which new and old vehicles are mixed, and others to the effect that the forces were too high to be achieved with reliability by available friction materials. The Administration has determined that compatibility problems are substantially lessened if the vehicle has the ability to stop without lockup and that the retention of a relatively high retardation force requirement will not lead to significant compatibility problems. It has been determined, however, that the stopping distance requirements can be met by brakes having a somewhat lower retardation force capacity than proposed, and a lower force requirement is therefore adopted.

Comments regarding the proposed brake power requirements stated that the fade characteristics required of the linings might exceed the limits of existing technology and might not be compatible with the retardation force requirements. In the light of these comments and other information it has been determined that the brake power requirements should be reduced. Accordingly the standard as adopted requires 10 decelerations at a rate of 9 feet per second per second at intervals of 72 seconds with the air pressure at 90 p.s.i. or less, and a final deceleration at 14 f.p.s.p.s. from 20 m.p.h. with a service line air pressure of 108 p.s.i. or less. In the light of the diminished power requirements, the recovery requirements have been retained with a minor adjustment from 45 p.s.i. to 40 p.s.i. in the minimum air pressure required.

A series of alterations have been made in the equipment requirements in response to comments and as a result of reevaluation by the Administration. First among these is the alteration of the stop lamp switch requirement to permit use of a pneumatic switch. The requirements for compressor capacity have been modified to require it to increase air pressure in the reservoirs from 85 p.s.i. to 100 p.s.i. in not more than 25 seconds, in place of the proposed requirement of 0–85 p.s.i. in 2 minutes. The mandatory require-

ment for a supply reservoir has been removed, and the overall reservoir capacity for trucks and buses has been reduced to 12 times the combined brake chamber capacity. The drain valve requirement has been simplified, the tolerance on the air pressure gauge has been broadened to ±7 percent of the compressor cut-out pressure, and the low air pressure warning requirement has been modified to permit visible, nonaudible signals within the driver's forward field of view.

The notice proposed that each truck and bus have a split service brake system. It has been determined that the additional cost and greater complexity of a split system on vehicles equipped with air brakes are not accompanied by safety benefits great enough to justify requiring a split system. Accordingly, the requirement has been deleted. The remaining system with emergency capabilities is the parking brake system, and it has been determined that a parking brake system complying with the applicable requirements of the standard will provide a safe means of stopping the vehicle in the event of service brake failure.

Two aspects of the parking brake system were the subject of considerable comment. A number of comments stated that no maximum static retardation force should be specified, and several comments stated that the parking brakes should not apply automatically. The standard as adopted retains both the maximum retardation and the automatic application requirements. Each has a role in the safe operation of the parking brake system. If no maximum retardation force were specified, there would be considerable risk of lockup during emergency braking. The requirement as adopted, however, raises the upper limit on the quotient

$$\frac{\text{static retardation force}}{\text{GAWR}}$$

from 0.33 to 0.40.

Comments stated that automatic application of the brakes while the vehicle is in motion could induce hazardous instability, due to wheel lockup or to the unexpected nature of the braking. It has been determined that adequate safeguards exist in the standard to avoid such problems. The required low pressure warning signal must operate at a pressure well above the automatic application pressure so that the driver will have sufficient warning of incipient brake application. In addition, the limit on retardation force will act to prevent lockup under all but the most severe conditions. With respect to trailers, the automatic functioning of the parking brake system is further insured by the deletion of the proposed requirement for a check valve or similar device to protect the trailer's air pressure.

The parking brake controls have been considerably simplified by uniting in one control the manual on-off operation and the release-after-automatic-application function.

Many comments revealed a misunderstanding about the Administration's purpose in specifying test conditions. It should be understood that the standards are not instructions for, or descriptions of, manufacturer tests. For example, the condition that states that "(t)he wind velocity is zero," simply means that the vehicle must meet the applicable tests if (among other things) the air is still, that is, if the wind neither helps nor hinders the vehicle's performance. One way in which the manufacturer could check his vehicle's conformity with reference to the zero wind condition is to run the braking test with a resultant tailwind. With reference to another condition, such as the surface with a skid number of 75, the test could be run on a surface having a skid number lower than 75. Manufacturers are required to exercise due care to insure that their vehicles will meet the standard if tested by the Administration under the specified conditions, but they are at their own discretion in devising an appropriate testing program for that purpose.

A few changes have been made in the test conditions. The notice had proposed, in addition to the zero wind condition, that the vehicle stay in the roadway with a wind of 30 m.p.h. from any direction. On review, the 30-m.p.h. speed has been determined to be excessive and to unduly increase the problems of testing. In addition, most stability problems are controlled by preventing wheel lockup, as required by the standard, and the crosswind condition has therefore been deleted. In place of the "lightly loaded vehicle weight," a weight condition based on the vehicle's unloaded weight is used.

Effective date. Because of the development work and preparation for production that this

standard will require, it is found that an effective date later than 1 year from the date of issuance is in the public interest. Accordingly, the standard is effective January 1, 1973.

In consideration of the above, § 571.21 of Title 49 of the Code of Federal Regulations is amended by adding Motor Vehicle Safety Standard No. 121 as set forth below. This standard is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1392, 1407, and the delegation of authority by the Secretary of Transportation to the National Highway Traffic Safety Administrator, 49 CFR 1.51.

Issued on February 19, 1971.

Douglas W. Toms,
Acting Administrator, National Highway Traffic Safety Administration

36 F.R. 3817
February 27, 1971

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems—Trucks, Buses, and Trailers

(Dockets No. 70–16 and 70–17; Notice 3)

The purpose of this notice is to respond to petitions requesting reconsideration of Motor Vehicle Safety Standard No. 121, *Air Brake Systems*, § 571.121 of Title 49, Code of Federal Regulations. After issuance of the standard on February 19, 1971 (36 F.R. 3817, February 27, 1971), petitions for reconsideration were filed pursuant to 49 CFR 535.35 by a number of vehicle and equipment manufacturers. This notice grants some of the requests by amending the standard, and denies other requests.

1. *Service brake system.* The service brake system requirements have been reorganized for reasons of clarity and have been amended with respect to the order of testing and the number of tests to be conducted. The dynamometer tests have been separated from the road tests and placed in section S5.4. The road test section has been amended to specify the order in which the stopping tests are to be run. The section is further amended to provide that a truck or bus will be stopped six times for each combination of loading, speed and road conditions and that it will be considered to meet the requirement if one stop is made in the required distance with the required stability and freedom from wheel lockup. This amendment has been adopted to ease the problems arising from a test driver's unfamiliarity with a vehicle's behavior. To accomodate antilock systems that permit some wheels to lock for longer periods than others, the reference to "momentary" lockup in S5.3.1 and S5.3.2 has been amended to refer to "controlled" lockup.

S5.3.2, *Stopping Capability, Trailers*, has been amended in minor respects, to make it clear that the 90 p.s.i. pressure level is system-wide and not confined to the brake control lines, and to provide that the trailer is to stop the combination of vehicles without benefit of the towing vehicle's brakes.

The brake power requirements of S5.4.2 and the dynamometer test conditions of S6.2 are each amended to refer to the drum "or disc" to avoid the possibility that the sections would be misconstrued as requiring drum brakes. The brake recovery requirements of S5.4.3 are amended by lowering the minimum air pressure requirement to 20 p.s.i. from 40 p.s.i. This amendment is based on a reassessment of the problems associated with over-recovery that has led the NHTSA to conclude that 20 p.s.i. is a reasonable level.

The requirements concerning antilock system failure and the provision of power for antilock systems on trailers have been separated from the other service brake requirements and placed in S5.5.

2. *Service brake retardation force.* The standard as adopted in February 1971 required the brakes on each axle to produce specified retardation forces at each of several brake chamber air pressures. As indicated in the issuance of the standard, the primary goal of the retardation force requirement was to insure brake compatibility between vehicles used in combination. On review of petitions requesting exemption of vehicles that do not tow other vehicles from the retardation force requirements, the NHTSA has determined that for these vehicles the requirements are not necessary. Accordingly, S5.4.1 is amended to apply only to vehicles that are intended to tow or to be towed by another vehicle equipped with air brakes.

In response to petitions objecting to axle by axle force calculations, the retardation force requirements are further amended to provide that the retardation force for all axles shall be added

together and divided by the sum of gross axle ratings to arrive at the values shown in Table III. The effect of the amendment is to allow greater flexibility in the allocation of braking force between axles.

The overall braking force required of the vehicle's brakes, however, remains the same as before. The NHTSA has considered and rejected the requests for different retardation values and for substitution of SAE J992a for the dynamometer tests of S5.4.1. The present retardation force requirements in Table III are considered to be a reasonable accommodation between the need for compatibility with existing vehicles and the need to establish a uniform pattern of brake response over the range of operating pressures. The dynamometer procedures of S5.4.1.1, which permit measurement of brake forces on an individual vehicle, are more suited to the regulatory purpose of this standard than are the procedures of SAE J992a, which provides for road testing of vehicles in combination. The agency recognizes that the availability of dynamometers of sufficient capacity is a concern to many petitioners, but available evidence indicates that dynamometer access will not be a major long-term problem. The petitions to delete dynamometer testing are therefore denied.

3. *Parking brake system.* The parking brake system required by S5.4 of the standard had several features that were widely objected to by the petitioners. In particular, petitioners objected to the requirement for automatic application of the parking brakes in the event of pressure loss. Although the standard specified a maximum retardation force level of 0.40 to reduce the possibility of lockup during automatic application, many petitioners stated that automatic application of the brakes would surprise the driver and adversely affect his handling of the vehicle.

The NHTSA remains convinced that automatic application of the parking brake is a satisfactory means of providing braking in the event of service brake failure. The low pressure warning signal required by S5.1.5 is considered adequate to warn a driver of impending application of the parking brake to avoid most of the effects of surprise. However, review of the petitions has persuaded the agency that automatic application of the parking brake need not be mandatory. Accordingly, the standard is amended to provide for an alternative parking brake system that is manually, and not automatically, applied.

To accommodate the new alternative, the parking brake requirements have been reorganized into two main sections: S5.6, which specifies requirements for parking brakes generally, and S5.7, which sets out the emergency braking capabilities for automatic systems (S5.7.1) and manual systems (S5.7.2) on trucks and buses. A third section (S5.8) deals with the emergency braking of trailers.

The general requirements of S5.6 are derived from S5.4 of the original standard, with some additions and amendments. The braking force generated by the parking brakes is measured, at the manufacturer's option, either by a static draw bar test, which must produce a force level of 0.28, or by a holding test on a 20% grade. The tests are to be conducted in both forward and rearward directions. As provided in the original standard, the parking brakes must be applied by an energy source that is independent of the air pressure in the service brake system.

Additional changes have been made in S5.6 with respect to the requirements for the parking brake control. The standard as published in February 1971 specified the shape and color of the parking brake control, as well as its location, and provided that manual operation and release after automatic application should be accomplished by movement of a single control. After review of the petitions, it has been decided to allow greater flexibility in the design and operation of the control. Efforts are now underway within the industry to standardize controls, and it may be that a consensus will be reached upon which a more standardized control can be based. In the meantime, the standard's specifications have been reduced to requiring the control to be separate from the service brake control, operable from the normal driving position, and identifiable as to its method of operation. The shape, color, and number of controls, and the method of operation, are left to the judgment of the manufacturer.

The major difference between the emergency braking performance required of a vehicle with a manual system and the performance required of a vehicle with an automatic system is that a vehicle with a manual parking brake is required by S5.7.2.3 to meet a stopping distance test with an air pressure failure in the service brake system. Although a manufacturer may elect to use the parking brakes to provide this emergency stopping capacity, he may use other components to supplement the parking brakes or he may use a system entirely independent of the parking brakes.

A vehicle with an automatic parking brake may, at the manufacturer's option, either meet the stopping distance test of S5.7.2.3, or have a maximum static retardation force not greater than 0.40, measured in accordance with S5.6.1. Several petitioners requested deletion of the maximum retardation force levels for automatic brakes. Although the agency remains concerned about the effects on a vehicle's stability of automatic brake application, it has determined that a vehicle capabable of meeting specified stopping distance requirements when the brakes are automatically applied should not be held to the maximum force level requirement.

With respect to both automatic and manual brakes, provision is made for control of the parking brakes of the towed vehicle. It was noted by some petitioners that automatic application of a towing vehicle's brakes, without simultaneous application of a towed vehicle's brakes, could lead to unstable braking and possibly to jackknifing. To lessen the risk of such instability, the automatic brake requirements are amended to require the venting of the towed vehicle's supply line so that its brakes will apply upon application of the towing vehicle's brakes.

4. *Other provisions amended.* In S4 the definition of "antilock system" has been amended to refer to "rotational wheel slip" to distinguish the phenomenon controlled by the antilock systems from other types of wheel slip. The definitions of "gross axle weight rating," "gross vehicle weight rating," and "unloaded vehicle weight" have been omitted, since they have been incorporated in the general definitions section of Part 571, 49 CFR 571.3(b).

The equipment requirements have been amended in a number of minor respects. S5.1.1 has been amended to include supply reservoir capacities. The reservoir capacity required has not been changed, but the requirement is clarified by striking the words "greater than" in S5.1.2.1 and in S5.2.1.1. The requirement for a towing vehicle protection valve (S5.1.3) has been amended by the use of the broader term "system" in place of "valve."

The pressure gauge requirement (S5.1.4) has been amended to require a gauge in each service brake system, rather than to require a gauge directly on the service reservoir. The warning signal requirement (S5.1.6) is amended in response to petitions to provide that warning must be by means other than the pressure gauge indicator. The antilock warning signal requirement (S5.1.6), has been amended to limit the warning to the event of electrical failure, pending investigation of other types of failure for which a warning may be practicable.

5. *Petitions denied.* Several requests for amendment of the equipment requirements have been denied. A request that the service reservoirs be connected in series has been rejected as unnecessary and design restrictive. Requests for reduction in minimum reservoir capacity are also denied. The present requirement of 12 times the combined volume of service brake chambers has been applied by the SAE to intracity buses and school buses for some time and is considered a reasonable requirement for other vehicles, particularly in the light of additional demands made on air capacity by antilock systems.

Several petitions requested amendment of the vehicle weights specified in S5.3 for the service brake tests. Requests were made for additional weight on the vehicle in its unloaded condition to allow for the weight of the completed body and for safety equipment such as roll bars used during testing. Since the vehicles tested by the NHTSA will be completed vehicles, however, it is not appropriate to specify an additional weight. If an incomplete vehicle manufacturer wishes to ascertain the performance of this vehicle in one or more of its completed variations, he may do so by placing weights on the incomplete vehicle, by actually mounting a body on

it, or by any other means that are reasonably calculated to evaluate the braking performance of the completed vehicle. With respect to safety equipment, the NHTSA regards the problem of weight associated with safety devices as easily surmountable. Each of the petitons requesting changes in the weights specified in S5.3 is accordingly denied.

A number of petitions requested increases in the stopping distance required by S5.3.1. The distances specified are considered reasonable and well within the state of the art. Greater distances would increase the disparity between trucks and cars and be contrary to the interests of safety. The petitions are denied. Similarly, the petitions for an increase in the skid number of the dry surface from 75 to 80 are denied. The 75 number is representative of road surfaces, and has been a part of the consumer information requirements long enough that the availability of skid pads should not be a probelm. Similarly, the requests that 30 skid number tests be run on dry pavement or that they be abandoned are denied. Braking in wet weather is an evident problem with vehicles of all types, and the NHTSA regards the wet-track test as an essential part of the standard.

The stopping capability requirement for trailers (S5.3.2) was the subject of petitons requesting deletion of the 90-p.s.i. pressure level requirement and objecting to the uncertainty involved in determining whether the tractor or the trailer is responsible if the trailer leaves the 12-foot-wide lane. The NHTSA regards a uniform service line pressure specification as an appropriate means of insuring uniformity in trailer response, even though some tractors may be designed to modulate air pressure in the lines. Since only the trailer is to be braked, the cause of deviation from the lane will be the trailer's brakes, not the tractor's. The petitions are denied.

The actuation and release requirements of S5.3.3 and S5.3.4 were subject to a variety of objections. One petitioner requested deletion of both requirements, while others requested elimination of the 50-cubic-inch test reservoir for trailers that tow other trailers. On review, the NHTSA has decided to deny the petitions. Although the stopping distance test of S5.3.1 necessarily limits the actuation time that a manufacturer can allow, the additional constraint placed on timing by S5.3.3 has the important effect of producing full braking at a very early point during the braking maneuver where the speed is greatest and the effects of a reduction in speed most significant from the standpoint of the forces involved in a crash. The brake release time has an important bearing on the maneuverability and directional stability of vehicles in emergency situations. It can sometimes be as important for the brakes to come off quickly and evenly as for them to be applied quickly.

The 50-cubic-inch test reservoir has been employed for some time in the SAE brake testing. It has therefore been retained. Other suggestions in the petitions for service reservoir timing and for additional test component specifications are not adopted at this time but may be appropriate subjects for future amendment.

With respect to the loading conditions specified in S6.1.1, a number of petitioners stated that the front-rear brake balance needed to achieve conforming performance on a truck-tractor loaded to GVWR in its bob-tail configuration would not be the best balance for that tractor when towing a trailer. This appears to be a valid objection, but the most obvious alternative—testing with a trailer in tow—involves complexities that have not been fully discussed in the petitions. A notice is therefore being prepared to propose that a truck tractor be tested with a trailer during the stopping distance tests.

Effective date: September 1, 1974. Review of the numerous petitions for extension of the effective date from January 1, 1973, has led to the conclusion that an effective date of September 1, 1974, would permit a longer period of fleet testing to evaluate the durability of the new systems and that the resulting production systems are likely to be substantially improved by the additional time allowed. An effective date later than one year from the date of issuance is therefore found, for good cause shown, to be in the public interest.

In consideration of the above, Motor Vehicle Safety Standard No. 121, Air Brake Systems, in § 571.21 of Title 49, Code of Federal Regulations, is amended to read as set forth below. This amendment is issued under the authority of sec-

tions 103 and 119 of the National Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1392, 1407, and the delegation of authority by the Secretary of Transportation to the National Highway Traffic Safety Administrator, 49 CFR 1.51.

Issued on February 16, 1972.

Douglas W. Toms
Administrator

37 F.R. 3905
February 24, 1972

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems—Trucks, Buses and Trailers

(Docket No. 70–17; Notice No. 4)

The purpose of this notice is to respond to petitions filed pursuant to 49 CFR § 553.35, seeking reconsideration of the amendments to Motor Vehicle Safety Standard No. 121, Air Brake Systems, published February 24, 1972 (37 F.R. 3905). The petitions are granted in part and denied in part.

I. *Amendments*

S5.1.6 International Harvester stated that the operation of the antilock warning system should be the same as that of the low pressure warning signal under S5.1.5. S5.1.6 presently requires an audible warning of at least 10 seconds duration regardless of whether the visible signal required by the section is within the driver's forward field of view. The change requested by International Harvester would require an audible warning only if the visual warning is out of the driver's forward field of view. On reconsideration, the NHTSA has concluded that the system requested by International Harvester will give the driver adequate warning of antilock system failure. S5.1.6 is therefore being amended to parallel S5.1.5.

S5.1.5 and S5.1.6 In a letter designated as a request for clarification or interpretation, General Motors suggested that because diesel systems do not have an "on" position, they might be considered exempt from the requirement that the antilock warning signal must operate when the ignition is in the "on" position. Although the NHTSA does not consider it likely that the requirement will be understood as exempting diesels, the agency has concluded that amending the standard to refer to the "run" position as suggested by GM would avoid any possibility of misinterpretation. S5.1.5 and S5.1.6 are amended accordingly.

S5.2.1.1 Midland-Ross requested that a pressure should be specified at which the protected reservoir should be capable of releasing the parking brakes. On reconsideration, it seems appropriate to specify a pressure that corresponds to the lower end of the range of pressures maintained by current compressors. The section is therefore amended to specify a pressure of 90 p.s.i. The related question of when the brake is considered to be released, also raised by Midland-Ross, does not require amendment. The NHTSA considers a brake to be released at the point where it no longer exerts any torque.

S5.2.1.2 In response to a question in the Midland-Ross petition and a related request for interpretation by Wagner Electric Corporation, this section is amended by adding the word "service" before "reservoir", so that the section, as amended, requires the total service reservoir volume to be at least eight times the combined volume of all service brake chambers at maximum travel of the pistons or diaphragms. The amendment reflects the basic intent of S5.2.1.2, which is to have a specified volume of air available to the service brakes.

S5.4 Several petitioners stated that S5.4 appeared to exempt some vehicles from the dynamometer requirements. This impression is erroneous, in that all vehicles are required to conform to S5.4. The source of the confusion appears to be the sentence in S5.4 which states that "[a] brake assembly that has undergone a road test pursuant to S5.3 need not conform to the requirements of this section". The intent of the standard is to conduct the dynamometer tests on new brake assemblies, and the quoted sentence was intended to make it clear that a single brake assembly would not have to pass the road test

and the dynamometer test in succession. The sentence is being amended to clarify its meaning.

S5.7.1.4 This section is amended in response to a request by Wagner Electric, to require manual application whenever the system pressure prevents automatic application.

II. *Provisions not amended*

With respect to the remaining petitions, no changes are being made in the standard. In some cases this is because the petitioner has misinterpreted the applicable provisions to his disadvantage and needs no amendment to obtain the relief he wants. In other cases, the agency has concluded that the requested amendments do not serve the need for motor vehicle safety. In one or two cases, the change requested may prove desirable but cannot be fully evaluated without further information. The following discussion deals with the petitioned requirements in numerical order.

S3. Clark Equipment Company requested the addition of trailer converter dollies to the list of affected vehicles. The addition is not necessary, in that a converter dolly is a "trailer" within the meaning of that term in 49 CFR 571.3(b).

S5.1 Clark Equipment Company requested an amendment to exclude vacuum brake systems from the equipment requirements of S5.1. Despite the reference to a vacuum assist in S4, the standard does not apply to vacuum brakes and therefore does not require vacuum systems to have the equipment described in S5.1.

S5.1.2.2 It was suggested by Midland-Ross that the requirement that the reservoir must be capable of "withstanding" the specified pressure was not sufficiently precise. It may be that experience will show a need for quantification of this requirement, but the agency does not consider it to be necessary at this time. A reservoir will be considered to withstand the test pressure if it shows no pressure loss during the test interval.

S5.1.3 It was suggested by Midland-Ross that the requirements for the towing vehicle protection system should be amended to indicate the degree of protection required and the operating modes protected. The agency's response is much the same as its response on S5.1.2.2: the suggestion may prove to have merit, if systems appear which cause problems in service. At this point, however, the agency will retain the broad requirement that a towing vehicle must have a system to protect it from the loss of air pressure in the towed vehicle, without regard to the system's design or method of operation.

S5.1.5 Midland-Ross requested an increased pressure level at which the low pressure warning signal actuates, so that it would be above the protection valve trip pressure used in new trailers. The requested change is not necessary, in that the standard does not now prevent the manufacturer from setting the signal actuation level at a pressure above 60 p.s.i. If Midland-Ross wishes to set its level at 80 p.s.i., it may do so.

S5.1.6 Clark Equipment Company requested that the antilock warning signal requirements be expanded to apply to the failure of a towed vehicle's antilock system. The NHTSA is receptive to further discussion of this issue. However, it has decided not to adopt the request at this time. Trailers are not required to have provision for antilock warning systems, and requiring towing vehicles to accommodate systems that are not likely to exist would be unjustified.

S5.3.1 Two petitioners requested amendments of the stopping distance requirements. The Carlisle Corporation requested a longer stopping distance, and Midland-Ross requested that the reference to "controlled lockup" be amended to specify a system that would provide for resumption of wheel rotation at some point before the speed falls to 10 m.p.h. Both requests are denied. The distances specified are considered to be appropriate and within the current state of the art. The requested change with respect to wheel lockup would permit systems in which all wheels could be completely locked for substantial periods, a situation that S5.3.1 was designed to avoid.

S5.3.3 Midland-Ross requested that Figure 1, referenced by this section, should be amended by specifying a pressure of 100 p.s.i. in both reservoirs, by omitting the tractor protection valve from the test rig, and by employing a service brake control valve rather than a brake pedal. Because S5.3.3 specifies a pressure of 100 p.s.i., it should be clear that each reservoir would be at that pressure, and no amendment is necessary.

A protection valve is used because such valves are in widespread use, even though they are not required by the standard. The service brake pedal specified in Figure 1 is a service brake foot control valve. No change of label appears necessary.

S5.4.1 International Harvester requested the deletion of this section as unnecessary. As stated before, the purpose of the section is to promote compatibility between the brakes of vehicles used in combination. The agency is of the opinion that it serves the stated function and has therefore retained it.

S5.4.2 Wagner Electric and the Carlisle Corporation each objected to certain aspects of this section. Wagner Electric requested the reinstatement of the phrase "at least" before the deceleration of 9 f.p.s.p.s., and requested the use of the phrase "a minimum" in S5.4.2.1, on the grounds that it is impossible to achieve a deceleration rate of exactly 9 f.p.s.p.s. In response, it should be pointed out that it is not necessary for a manufacturer to conduct his tests at exactly the specified rate, but only to test in such a manner as to assure himself that if the brakes were to be tested at that rate they would meet the requirements. It is to his advantage to test under less favorable conditions than those specified in the standard. The insertion of the language requested by Wagner would, if anything, make the test more severe for the manufacturers, in that the government could run tests with average decelerations in excess of 9 f.p.s.p.s. making the "worst case" situation much more difficult to ascertain.

The Carlisle Corporation objected to procedural disparities between the retardation force tests of S5.4.1 and the brake power tests of S5.4.2. The basic procedural difference between the sections is that the measurement period under S5.4.1 begins when the specified air pressure is reached whereas the period under S5.4.2 begins with the onset of deceleration. Although it may be that different instrumentation will be required in the two tests, they are not for that reason inconsistent or incompatible. The NHTSA considers each procedure to be appropriate for the aspect of performance that it measures.

S5.4.3 The Carlisle Corporation requested a further reduction in the lower limit of the recovery force, from the current level of 20 p.s.i. to 10 p.s.i. The NHTSA considers a brake system that produces a deceleration of 12 f.p.s.p.s. with a pressure of only 10 p.s.i. to be too sensitive and therefore denies the petition.

S5.5.2 Clark Equipment Company objected to the use of the stop lamp circuit to power the antilock system. The basis for the requirement is the need for compatibility between trucks and trailers made by different manufacturers. The stop lamp circuit is the most suitable electrical connection between trucks and trailers because it is always energized when the brakes are applied. It was therefore chosen as the source of power. The agency is of the opinion that the stop lamp circuit has adequate power for single trailer applications. For multiple trailers, it may be necessary to employ complementary systems as permitted by S5.5.2. The petition is therefore denied.

S5.6.1 In response to a request for interpretation by International Harvester, the intent of this section is to require parking brakes on each axle other than steerable front axles.

S5.6.2 Midland-Ross suggested the amendment of this section to specify that a sliding bogie on a semitrailer shall be placed in its most favorable position. As presently worded, the section is silent with respect to bogies so that the NHTSA will be obliged to test in a manner that favors the manufacturer. However, if there are indications that the position of the bogie makes a substantial difference in the braking performance of the vehicle, the agency will consider rulemaking to specify that the trailer must meet the requirements with the bogie in any position.

S5.7.1.1 Wagner Electric requested an amendment to provide for brake application when the pressure in "any" service reservoir is less than the automatic application pressure level. The section now requires application when "all" service reservoirs are below that level. The NHTSA does not consider the requested amendment necessary to permit the type of system that Wagner envisions. It is permissible under the present wording for a manufacturer to have a system that applies the brakes upon a low pressure signal from a single reservoir. To require operation in such a case, as Wagner requests, would elimi-

nate systems that are capable of fully applying the service brakes despite low pressure in one reservoir.

S5.7.2.2 The Clark Equipment Company requested deletion of "brake fluid housing" from the list of items whose failure must not affect the parking brake system. The purpose of the section is to make it clear that the sharing of components by the service and emergency braking systems should not be construed as permitting malfunction of the parking brake system despite the provisions of S5.6.3. The petition is denied.

S5.8 The Clark Equipment Company requested the deletion of the phrase "or S5.6.2" from this section, on the grounds that it converts the requirement into a parking brake requirement that may be weaker than the emergency braking performance currently required under the regulations of the Bureau of Motor Carrier Safety. However, despite the use of .20 rather than the value of .28 specified in S5.6.1, the trailer under S5.6.2 is loaded to its GVWR and the supporting dolly is unbraked so that the braking performance required by the two sections is nearly identical. The NHTSA has therefore decided to retain the option of S5.6.2 under S5.8.

S6.1.1 Midland-Ross requested that the loading of a trailer be based on the sum of its GAWR's rather than on its GVWR. A GVWR designation for trailers is required by Part 567, and the agency considers it appropriate to specify GVWR as the test condition under this section.

S6.1.7 International Harvester again questioned the appropriateness of using a skid number of 75 for road tests. This issue has been raised a number of times in the course of the various braking standard rulemakings. Although the NHTSA is not prepared at this time to state that a number higher than 75 ought to be selected, the agency intends to collect additional data concerning road surfaces with a view to possible future changes.

S6.1.9 Midland-Ross stated that parking brake tests for semitrailers should be conducted with the trailer front end supported by the trailer landing gear. The use of the parking brakes as part of the emergency braking system and the unknown effect of the friction in the landing gear system weigh against the adoption of this requirement. The petition is denied.

S6.2.1 The Carlisle Corporation requested that a 5% tolerance be specified in the dynamometer loading. The request is denied, for the reasons given in the preceding discussion of Wagner Electric's petition on S5.4.2.

In consideration of the foregoing, Motor Vehicle Safety Standard No. 121, 49 CFR § 571.121 is amended . . . .

Effective date: September 1, 1974.

This rule is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1392, 1407, and the delegation of authority at 49 CFR 1.51.

Issued on June 21, 1972.

Douglas W. Toms
Administrator

37 F.R. 12495
June 24, 1972

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems

(Docket No. 73–13; Notice 3)

This notice amends Motor Vehicle Safety Standard No. 121, *Air brake systems*, by modifying the emergency stopping distance requirements for truck-tractors, the parking brake requirements for trailer converter dollies, and the recovery requirements for antilock equipped brakes, and by establishing a new test condition for loaded truck-tractors, special test conditions for certain drive and axle configurations, and a new burnish condition for road tests.

The amendments adopted by this notice represent a partial adoption of the changes proposed in Docket No. 73–13, Notice 1 (38 F.R. 14963; June 7, 1973). The comments to the proposal were divided as to the merits of most of the changes proposed. Running throughout the comments, however, was an overriding concern with lead time. Although a manufacturer might favor a change, such as the proposed change in the burnish condition, he may find himself unable to adjust to it within the time remaining before the standard becomes effective on September 1, 1974. The NHTSA, for its part, does not consider the proposed changes significant enough to warrant postponing the effective date of the standard. The agency has therefore adopted two provisions for which lead time appears to be a problem—the new burnish condition and the new truck-tractor test condition—as options for the period between September 1, 1974, and September 1, 1976. Of the remaining changes proposed in Docket 73–13, some are adopted effective September 1, 1974, others are not being adopted and will not be further considered for adoption, and others remain as candidates for adoption. If the latter are adopted, they will become effective at some date beyond September 1, 1974. The treatment accorded each of the proposed changes is set out in order below.

S4. Definitions were proposed for "isolated reservoir" and "service reservoir". Insofar as the principal use of these definitions was to be in proposed amendments which are not being adopted at this time, there is little purpose in adding them to S4 at this time. They are therefore not adopted.

S5.1.2.5 This new section was to have been added to prevent the diversion of air from the service reservoirs into other reservoirs when the service reservoir pressure is below 60 psi. In addition to questions of lead time, several comments stated that the equipment served by auxiliary reservoirs, such as windshield wipers, often plays a role in safety as significant as that of the brake system. In consideration of these factors, the section is not being adopted at this time, and if subsequently adopted will take into account both lead time and the effects on other safety systems.

S5.1.3 The amendment proposed to the towing vehicle protection system requirements was to have accompanied the amended emergency braking requirements of S5.7, and would have designated the protection system as the system enabling the vehicle to meet the emergency stopping requirements of S5.7.2.2 and S5.7.2.3. The agency has decided to defer action on the amendments to S5.7, as discussed below, and accordingly takes no final action on S5.1.3 at this time.

S5.1.6 An amendment was proposed to the antilock failure signal requirements in response to a petition by Berg Manufacturing Company. Berg has subsequently withdrawn its petition, and in the absence of compelling reasons to adopt the proposed change, the NHTSA has decided not to amend S5.1.6.

S5.2.1.1 The requirement for the reservoir used to release the parking brakes was to be amended to specify two brake releases, rather than one, and to specify the initial pressure from which these releases were to be accomplished. The agency continues to regard these changes favorably, but has decided to defer final action until the issuance of amendments concerning the parking and emergency systems, as discussed under sections S5.6 and S5.7.

S5.3.1 and **S5.3.2**. Rather than amend the general language of these sections concerning the circumstances under which lockup is permitted during a stop, the agency has decided to leave the sections essentially unaltered. In response to requests to clarify the treatment accorded liftable axles, the section is amended to permit, in effect, liftable axles without antilock on vehicles with more than two nonsteerable axles. Liftable axles on vehicles with two nonsteerable axles would continue to be subject to the no-lockup requirement except for controlled lockup allowed by an antilock system.

The principal change proposed for S5.3.1 and S5.3.2 had been a change in the description of permissible lockup from "controlled lockup allowed by an antilock system" to "lockup of wheels controlled by an antilock system that does not permit more than half the wheels on any controlled axle to lock more than momentarily." The intent of the proposed revision was to forestall systems whose "control" over the lockup of wheels, although nominally within the meaning of the language, might be so marginal as to permit more than half the wheels on a tandem axle to lock throughout the duration of a stop. The proposed amendment, however, was read by some manufacturers as expressly permitting systems in which half the wheels on each axle would not be sensed or monitored by the antilock controller or cycled by the antilock system. Such was not the intent of the proposal. It appears, on further review, that such systems are not currently in prospect. The agency has concluded that the better course is not to amend the "controlled lockup" language at this time, but to observe developments in the industry, with a view toward amending the requirements if subsequent events indicate a safety need.

S5.3.4 The notice had proposed increasing the release time for trailers from 0.50 second to 0.60 second. In the face of several objections to the proposal on the grounds that it ran counter to the need for coordination of braking between vehicles in combination, and on the basis of information indicating that the timing problem is solvable for trailers, the proposal is being withdrawn.

S5.4.1 The notice had proposed deleting the retardation force requirement, leaving it applicable only to towed vehicles. The change had been proposed as a result of the proposed amendment to the tractor test conditions whereby the tractor would be tested with a trailer. In the light of the comments, and of the continuance of the current tractor test conditions as an option, the NHTSA has decided not to adopt the proposed change.

S5.4.3 The notice proposed to delete the minimum recovery pressure requirement for brakes equipped with antilock systems, leaving the 20 psi minimum force level for other brakes. Upon further consideration, the agency has concluded that a minimum recovery force requirement should be retained for antilock equipped brakes, but at a level below 20 psi. The agency has determined that 12 psi is a minimum level that permits a greater variety of brake linings while retaining a residual protection against oversensitive brakes in the event of antilock failure. Accordingly, the agency adopts 12 psi as the minimum recovery force for antilocked brakes.

S5.6 The parking brake requirements of S5.6 had been one of the principal areas affected by the proposal. In addition to changes in the parking brake application requirements and deletion of the optional static pull test for parking brake holding ability, the notice had proposed new requirements for parking brake stopping capability. This latter proposal received almost unanimous criticism. Although the agency has not concluded that the proposal is without merit, the issues raised by the comments and the evident lead time problems associated with the proposal have led the agency to conclude that no further action should be taken without additional notice and opportunity for comment and that the effective date for any such requirement should lie beyond September 1, 1974.

Of the remaining changes to S5.6 proposed by the notice, only the exemption of converter dollies from the parking brake requirements is being adopted at this time. The proposed deletion of the optional static pull test of S5.6.2 has not been carried out, and the options of S5.6.1 and S5.6.2 will be retained. The proposed parking brake application requirements of S5.6.6 and S5.6.7, which had reflected amendments proposed to the emergency braking requirements of S5.7 are not being adopted at this time, pending further rulemaking on S5.7.

S5.7 The notice had proposed substantial revisions to the emergency braking requirements of S5.7, principally in response to a petition by ATA and to an earlier petition by Ford. The majority of the changes proposed in response to the ATA petition continue to be viewed favorably by the NHTSA. However, review of the comments suggests both that further refinements are necessary and that the proposed changes will require additional time for implementation. The agency is therefore deferring final rulemaking action on the aspects of S5.7 addressed by the ATA to a later date and will issue such changes as it may decide upon with an effective date beyond September 1, 1974.

Amendments to the emergency stopping distance requirements, presently contained in S5.7.2.3 of the standard, were proposed by two successive notices. In Docket 73–4, Notice 1 (38 F.R. 6831), the agency proposed a favorable response to a petition by Ford concerning the emergency stopping distances for short-wheelbase two-axle truck-tractors in the unloaded condition. When tested in this weight condition, truck-tractors are driven without a trailer—a condition in which they are seldom operated over the road. The effect of the proposed amendment would have been to permit a limited number of truck-tractors equipped with modulated emergency braking systems to stop in a somewhat longer distance than that permitted other vehicles with modulated emergency braking.

Comments to Docket 73–4 indicated that there were other vehicles whose braking systems were complicated by the shorter emergency stopping distance. In response to these comments, the agency proposed in Docket No. 73–13, Notice 1, to apply the longer stopping distances to other vehicles in the unloaded condition provided they were capable of stopping within the shorter distance with the assistance of the parking brakes. The comments to Docket No. 73–13 objected to the use of the parking brake in this fashion, and some asserted that if the longer distance were appropriate for some vehicles it should be appropriate for all. Upon review of the comments, the agency has decided against a general lengthening of emergency stopping distances. Upon weighing the rarity of truck-tractor operation without a trailer against the potential costs of modifying truck-tractors to meet the shorter stopping distance in that configuration, however, the agency has concluded that the longer stopping distances specified in Column 4 of Table II should be applicable to truck-tractors, regardless of weight distribution or number of axles, but that other vehicles should continue to meet the emergency stopping distances of Column 3 of Table II. Section S5.7.2.3 is amended accordingly.

S5.8 The notice had proposed to transfer the emergency braking capability requirement for trailers from S5.8 to S5.6.7. Until such time as the agency decides to adopt S5.6.7, S5.8 will be retained. To provide emergency capability for converter dollies, in the absence of mandatory parking brakes for them, the NHTSA has amended the section to provide for application of the dolly's service brakes in the event of complete air pressure loss in the control lines. This system is presently installed in virtually all dollies, as a result of regulations issued by the Bureau of Motor Carrier Safety (49 CFR 393.43) and is considered to be a practicable substitute for the parking brakes in emergency situations.

S6.1 A number of revisions to the test conditions of S6.1 were proposed. These revisions are adopted in substance, with some changes in structure and in section numbering. The new truck-tractor test condition, whose insertion as S6.1.2 had caused confusion as to the fate of the old S6.1.2, has been adopted as S6.1.10, thereby leaving the current sections S6.1.2 to S6.1.9 with their present numbering.

S6.1.8 The road test burnish procedures proposed in the notice are being adopted as an optional procedure for the period September 1, 1974, to September 1, 1976. After September 1,

1976, the new burnish procedure will replace the older procedure as the only burnish prescribed for road tests. This two-step arrangement appears necessary to permit manufacturers whose testing to date has been conducted with the current burnish procedure, and who need additional time, to phase in the new procedure.

S6.1.10 A similar phase-in has been found necessary for the new tractor test conditions. Several manufacturers had stated that their evaluation programs had been conducted without trailers and that retesting would be necessary in order to certify their vehicles under the new conditions. The new conditions are therefore adopted as an option for the period September 1, 1974, to September 1, 1976. During this period a manufacturer may choose to test his vehicles under either loading condition, and such tests as the NHTSA conducts will be in the loading condition chosen by the manufacturer for the vehicle under test.

S6.1.10.1 The control trailer to be used under S6.1.10 is specified as conforming to Standard No. 121.

S6.1.10.2 The center of gravity of the loaded trailer is specified as being at a height of 66±3 inches above the ground. There was a variety of opinion in the comments as to how high the center of gravity should be, but upon reviewing the comments the agency has concluded that the 66±3 inch range originally proposed is reasonably representative of loading conditions. Axle load shift due to the rake angle of the trailer bed does not appear to be a problem in that each axle of the trailer is loaded to its GAWR when the trailer is connected to the tractor.

S6.1.10.3 and **S6.1.10.4** In response to comments suggesting that the lengths and weight ratings of the trailers specified in the proposal were not those in most general use, the agency has increased the length of the trailer specified in S6.1.10.3, reduced the length of the trailer specified in S6.1.10.4, and lowered the gross axle weight rating for each trailer.

S6.1.10.5 The loading condition of the trailer for tests of the tractor's brakes is substantially the same as that proposed in the notice. The tractor's fifth wheel does not have to be adjustable, as some comments inferred, but if it happens to be adjustable it must be adjusted to produce the specified weight distribution. The axle loads are to be measured at the tire-ground interfaces, in response to comments that the former reference to the "force transmitted to the tractor axles through the kingpin" was not clear as to the method of measurement.

S6.1.10.6 and **S6.1.10.7** These sections are designed to establish performance specifications for the trailers to be used for truck-tractor testing. They are not intended as performance requirements for trailers, but only as test equipment specifications for the tractor tests. The trailer loading condition specified is somewhat different from that used in testing the performance of the tractor, because the tests are aimed at isolating the performance of the trailer brakes. The location of the fifth wheel is specified as the position determined under S6.1.10.5, but the trailer is loaded so that its axle is at its gross axle weight rating and its kingpin is at unloaded weight.

The actuation and release times specified for the trailer in the evaluation tests were questioned by several comments. It may be necessary, in some cases, for a special valve to be installed on the tractor if the tractor's system is too slow to actuate the trailer's brakes in the time specified. The purpose of the timing specification is simply to remove the tractor's performance as a factor in the trailer brake evaluation. When the trailer is used in tests of a tractor pursuant to S5.3.1 it will, of course, be connected to the tractor's normal control system.

In addition to specifying the same loading in S6.1.10.7 as in S6.1.10.6, the ratio applied to determine the trailer's stopping distance under S6.1.10.7 has also been revised to conform to that used in S6.1.10.6. To accommodate tractors that are not capable of 60-mph speeds, each section now specifies that the trailer is tested at the speed at which the tractor for which it will be used is tested.

S6.1.11 and **S6.1.12** These sections relate to special drive conditions and the position of liftable axles, and are adopted as proposed.

S6.1.13 This new section was proposed to establish performance requirements for the trailer timing test rig specified in Figure 1. In the

light of objections in the comments to the performance levels specified, the agency is deferring final rulemaking at this time and will issue such changes as it may decide upon with an effective date beyond September 1, 1974.

The tables and figures proposed for adoption or amendment by the notice are adopted as proposed, except for the omission of the parking brake dynamic test from Table I.

In consideration of the foregoing, Motor Vehicle Safety Standard No. 121, *Air brake systems* (49 CFR 571.121), is amended . . . .

Effective date: September 1, 1974.

(Sec. 103, 119, Pub. L. 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on December 20, 1973.

James B. Gregory
Administrator

39 F.R. 804
January 3, 1974

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems

(Docket No. 74–10; Notice 2)

This notice amends Standard No. 121, *Air brake systems*, 49 CFR 571.121, in response to several petitions for reconsideration of amendments to the standard published January 3, 1974 (39 F.R. 804), and after consideration of comments on a proposal published March 1, 1974 (39 F.R. 7966). A notice of proposed rulemaking has been issued separately to propose modification of the standard as it applies to trailers.

Reconsideration of Amendments—73–13; Notice 3

The amendments under reconsideration concern emergency stopping distance requirements for truck tractors, parking brake requirements for trailer converter dollies, recovery requirements for antilock-equipped brakes, a new test condition for loaded truck-tractors, special test conditions for certain drive and axle configuration, and a new burnish condition for road tests. Several manufacturers commented on issues which lie beyond the scope of those amendments and are therefore inappropriate for treatment in this response. Wagner Electric and Midland-Ross' petitions to amend S5.1.2.1 and S5.2.1.2 (Midland also petitioned on S5.1.2.2 and S5.2.1.3) and Wagner's petition to modify Table III retardation values will therefore be considered as petitions for new rulemaking to be answered in a separate notice.

The American Trucking Association (ATA) requested reconsideration of NHTSA's decision to permit either automatic or modulated emergency brake systems as options while further consideration of the modulated system takes place. As stated in Notice 3, the NHTSA has concluded that some aspects of the system may need refinement and that all vehicle manufacturers cannot in any case make all their vehicles conform to modulated brake system requirements by the standard's effective date. Accordingly, while the majority of the changes proposed in response to the ATA petition continue to be viewed favorably, for the present ATA's petition is denied.

Wagner Electric and General Motors objected to the retention of brake retardation force requirements for towing vehicles as redundant in view of the stopping distance requirements which also apply to them. The NHTSA proposed deletion of these dynamometer requirements previously and, having considered the latest submissions and information, hereby amends S5.4.1 to delete towing vehicles from the standard's requirements. The NHTSA has tentatively concluded that the stopping distance requirements can establish satisfactory brake balance between towed and towing vehicles, and that the cost of dynamometer testing is not justified by corresponding safety benefits. It should be noted that the dynamometer test may be reinstituted if experience demonstrates its need.

Fruehauf, in a late submission to this docket and in other docket comments, has emphasized the importance to lateral stability of a slower release time for trailers. A 0.60-sec maximum release time proposed in Notice 1 was not acted on in Notice 3 in the belief that it ran counter to the need for coordination of braking between vehicles in combination, but further study has persuaded this agency that a slightly slower release time for trailers is not detrimental to safe operation of combination vehicles. S5.3.4 has been amended accordingly.

General Motors and the Motor Vehicle Manufacturers Association (MVMA) petitioned for deletion of the 12 lb/in^2 minimum pressure requirement for brakes controlled by an antilock

system. The purpose of the minimum pressure is to eliminate oversensitive brakes because of the difficulty in modulating them. The lower value was established for antilock-controlled brakes on the assumption that a functioning antilock would normally compensate for oversensitivity. A residual value was retained in the event of antilock failure, not to compensate for driver surprise, as assumed by the MVMA, but rather to aid the driver in his efforts to carefully modulate a sensitive brake. The NHTSA has seen no evidence to support the assertions made by MVMA that this requirement could downgrade stopping performance. Except for General Motors' request to clarify antilock "control" in this section, the petitions to amend S5.4.3 are accordingly denied. S5.4.3 is modified to substitute "subject to the control of" in place of "controlled" to make clear that the antilock need not be activated.

General Motors and the MVMA objected to the test condition where a vehicle "is loaded to its gross vehicle weight rating, distributed proportionately to its gross axle weight ratings", arguing that this distribution formula could lead to overload of one or more axles. The General Motors illustration indicates a misunderstanding of the section's wording. The phrase "is loaded to its gross vehicle weight rating" describes a weight condition, that of the fully loaded vehicle, and the provision requires that this weight be distributed in proportion to the gross axle weight ratings. General Motors and the MVMA apparently interpreted the phrase to describe only that portion of the gross vehicle weight rating which "is loaded" on an unloaded truck to bring its weight up to GVWR. The condition states that what is distributed proportionately is the gross vehicle weight *rating* (*i.e.* the weight of the loaded vehicle), and not just that portion of the rating that constitutes the "load." There is no mathematical possibility of overloading an axle under this condition, since the GVWR must be no more than the sum of the GAWR's.

Ford stated with respect to S6.1.10.5 that "on some vehicles, it may not be possible to adjust the fifth wheel to a position in which the tractor can be loaded to GVWR without exceeding the GAWR of one axle." It may be that Ford's problem arises from the same misunderstanding described above with respect to GM and MVMA. To the extent, however, that the Ford petition implies that a manufacturer can establish a GVWR for a truck tractor which can not be attained without axle overload, the petition is based on a misconception of GVWR and is therefore denied.

Wagner Electric requested that the loadings in S6.1.10.6 be made uniform with S6.1.10.5 and S6.1.10.7. These loadings are not intended to be uniform, however, because the first condition specifies loading for purposes of truck-tractor testing, while the latter two conditions only establish test equipment specifications for the "control trailer test device" which is used in testing the truck-tractor. S6.1.10.6 and S6.1.10.7 loadings differ so that the service brake and emergency brake capabilities of the control trailer are separately designed to place greater demands on the truck tractor's service braking system than its emergency braking system. The calculations are based on an evaluation of the capacity of the brakes that are expected to be placed on production trailers in accordance with the dynamometer test requirements.

For the benefit of manufacturers who mistakenly consider these test conditions to be minimum performance requirements, it should be emphasized that the S6.1.10.6 and S6.1.10.7 values are conditions, i.e., characteristics of the control trailer test device which must be duplicated as closely as possible for testing. As with any other test device characteristic, to the degree that the control trailer can not produce exactly the right stopping distance, the certifying manufacturer should ascertain conformity of his vehicles under slightly more adverse conditions than those specified, in this case by slightly reducing the trailer brakes' capacity (to stop in the specified distance).

General Motors objected that the lighter control trailer capacities (18,000 and 32,000 pounds in place of 20,000 and 40,000 pounds) specified in the amendment would lower control trailer performance and thereby increase the performance required of truck tractors. The change was made to specify commonly used trailers, to aid manufacturers in meeting the September 1, 1974, effective date. The NHTSA continues to consider the increased availability of test devices to

be more significant to promulgation of a fully satisfactory final rule than the small quantitative change noted by General Motors, and their petition is therefore denied.

General Motors and the MVMA requested specification of test load density to resolve difficulties in establishment of the "worst case" center of gravity height when testing trucks. Specification of a test load density, however, is unnecessary. The manufacturer of a truck or incomplete vehicle should establish the limits of placement of the load center of gravity as a part of his design considerations, to be specified in the Part 568 document for an incomplete vehicle or in his instructions to users in the case of a completed one. This establishes an envelope within which the vehicle is certified to comply with Standard 121 under full load. Once that envelope is established, the appropriate load densities to test the vehicle's conformity can be derived from it.

Several petitions were received with regard to brake burnish procedures. The MVMA and Ford requested reinclusion of language found in the proposal that specified an acceleration procedure for vehicles unable to reach the specified speed in one mile. General Motors submitted minor changes of an editorial nature and new language to specify an increased deceleration rate for vehicles unable to reach the specified speed in one mile. The NHTSA has concluded that language which appeared in the proposal and reflects current SAE procedure should be adopted. The General Motors increased deceleration method represents a new procedure which has not been evaluated by the NHTSA or proposed in any previous rulemaking. The suggestion of 50 snubs before allowing a cooling period is also a new General Motors proposal which the NHTSA has not had the opportunity to evaluate. With the exception of one recommendation, General Motors' editorial suggestions are adopted to be consistent with the titles in Table IV. The word "maximum" was deleted from S6.1.8.1 at the request of several manufacturers because it was inappropriate to the specification of temperature range.

Ford requested the addition of a burnish procedure for parking brakes which do not utilize the service brake components. Language has been added to specify a burnish procedure for these brakes in accordance with the manufacturer's recommendations.

Two other issues were raised with regard to the road test conditions. To answer Wagner Electric's petition for clarification of S6.1.10.7, the "valve controlling the trailer brakes" may or may not be part of the normal commercial system of the tractor depending on whether or not the normal system can provide the timing specified. The purpose of standardizing timing specifications is simply to remove the tractor's performance as a factor in the test trailer brake evaluation. When the trailer is used in tests of a tractor pursuant to S5.3.1, it will, of course, be connected to the tractor's normal control system.

General Motors questioned the safety benefit of wheel lockup requirements for liftable axles on buses equipped with two non-steerable axles if other axles other than the liftable axle can themselves meet the stopping distance requirements. The agency considers the controlled performance of the liftable axle to be of considerable benefit for added stability under braking conditions other than straight ahead braking required by the standard, and on this basis it denies the GM petition.

In other areas of the standard, General Motors petitioned for longer emergency stopping distances for all vehicles, reasoning that an exception to the values for truck-tractors in an unloaded condition (based on rarity of operation) could be as easily justified for the rare emergency stop situation of any vehicle. The rationale ignores the fact that the emergency values were established in the first place with the rarity of such occurrences in mind, and that the exception is posited on the combined rarity of unladen truck-tractor operation involved in an emergency situation. The problem of testing chassis-cabs can be met by specifying conformity to S5.7.2.3 with a specified weight on the rear axle representing the vehicle body weight. General Motors' petition to apply column 4 values to all vehicle emergency stopping distance requirements is therefore denied.

Wagner Electric petitioned to modify the wording of S5.8 concerning emergency application of trailer converter dolly service brakes so

that the wording would be identical to Bureau of Motor Carrier Safety regulations (49 CFR 393.43). Wagner's proposed wording, however, applies to towing vehicle performance, where the triggering signal is a low, fixed air pressure, and the wording would not be appropriate for trailer performance, where the triggering signal is a venting of the supply line to the atmosphere. The S5.8 language is actually compatible with § 393.43(b), in that BMCS calls for towing vehicles to have an automatic means of activating the emergency features of the trailer air brakes, and S5.8 calls for compatible automatic features on the trailers. Wagner's petition is therefore denied.

General Motors asked whether the S5.4 requirement that brake assemblies meet tests in sequence actually exempts some brakes from all three tests if they are elsewhere exempted from the first. Paragraph S5.4 does not exempt any brake assemblies from any requirement. The brakes on a vehicle which does not have to comply with S5.4.1 must comply with S5.4.2 and S5.4.3.

Several comments requested correction of the omission of the words "in the service brake system" from S5.7.2.3 as published in Notice 3. The omission was inadvertent and has been corrected.

General Motors requested an indication that stopping sequence steps 2 and 3 in Table I apply only to truck-tractors. The steps have been changed to indicate that these steps apply only to truck-tractor testing by means of a control trailer. As for the objection that S6.1.10.7 implies the emergency system of a truck-tractor must control the trailer spring brakes, S6.1.10.7 has been clarified by the addition of a qualifying phrase. S6.1.10.6 and S6.1.10.7 have been further clarified by adding headings to indicate that they are test equipment specifications.

In a separate submission to Docket 73–13, Wagner Electric requested clarification of the trailer test rig timing issue, which had been reserved in Notice 3 as a candidate for adoption at some later date. Midland-Ross also raised the issue with regard to a requested modification of Figure 1. The petitions pointed out that an NHTSA test showing a failure would be inconclusive if it were compared to manufacturer testing conducted on a faster rig, and showing conformity. The remedy is to specify "legal baseline" actuation and release times, so the manufacturer will know the precise conditions under which his equipment must meet the requirements, and both government and industry testing can be conducted so as to produce conclusive results. The NHTSA therefore establishes the actuation and release values proposed in Notice 1 with minor modification. They will not become effective until September 1, 1975, to maintain the validity of testing already conducted. The values are set at two-significant-figure accuracy in agreement with Wagner that the values should match the actual trailer performance values. Because the actuation time is lowered to 0.06 seconds, the NHTSA may find it necessary to improve its test rig's speed by removing the tractor protection valve. Therefore, the valve has been made optional. The performance of the test device had been modified from the original proposal so that initiating signal points are the same as for the actual performance tests, and so that initial release pressure agrees with the 95-psi requirement of the performance tests.

Other issues raised by Wagner and Midland-Ross in petitions to Notice 3 will be answered in a later notice.

March 1, 1974 Proposals

The NHTSA proposed modification of the standard's effective date, brake actuation times, and road and dynamometer tests as they apply to the service brake system and emergency stopping performance of all vehicles subject to the standard except trailers (39 F.R. 7966, March 1, 1974). The proposals would have affected vehicle types separately to reflect the particular problems faced by fire fighting vehicles, "special permit" vehicles, on/off-highway vehicles, and standard highway trucks and buses. Manufacturer concern centered on the availability of components to meet the standard by September 1, 1974, and the reliability of the antilock systems which will be utilized by most manufacturers to meet the requirements. Having carefully considered the comments submitted in response to this proposal, the NHTSA hereby delays the standard's effective date for trucks and buses to

March 1, 1975, and establishes interim requirements for particular categories of vehicles essentially as they were proposed.

The limited delay of effective date does not satisfy the requests of Ford and General Motors, who argued for a complete delay of the standard for one year, followed by limited implementation of the standard. Other comments, including those of Chrysler and Rockwell International, asked for significant delays of one year or more based primarily on component shortages which will be discussed separately with regard to the specific problems of separate vehicle types.

Ford argued that the stopping distance requirements mandated high-torque front brakes that could degrade suspension and steering characteristics of some vehicles to an unsafe level. Their submission to the docket and materials submitted in conjunction with a presentation to the NHTSA on March 28, 1974, included evidence of erratic handling and suspension distortion in high- and low-speed spike stops on the proving ground by short wheelbase trucks. The American Trucking Association joined Ford in questioning vehicle handling under the standard's requirements.

Review of the Ford submission indicates that unmanageable suspension problems of this nature are generally encountered in short-wheelbase trucks with suspensions that have not been adequately modified for Standard 121 brakes. Other manufacturers have indicated in some cases that their solution to such severe instability has been a major redesign of the front axle and suspension system, or a decision to withdraw vehicles with especially short wheelbases from their product line. The NHTSA concludes that sufficient lead-time has been made available to all manufacturers to correct the steering and suspension problems of reasonably-designed short-wheelbase vehicles, and that vehicles with wheelbases that are so short, and centers of gravity that are so high, that they cannot stop safely in the stopping distances specified should not be on the highway.

General Motors and other truck manufacturers argued for delay of the standard's effective date for one year to permit additional field testing of the reliability of current antilock devices. The likely effect of such a delay, however, would be further delay in the availability of production antilock components. One air brake equipment supplier believes "continued development will eventually improve their (antilock systems) overall performance but most of these changes for refinement in electronics, improved pneumatic/electronic response, durability, sensor standardization and design standards require the normal evolution of field experience under real life conditions, using mass produced parts for a genuine field history."

The reliability of antilock systems can presently be judged on the basis of the performance of systems that are already in fleet test programs (and to a lesser extent by evaluation of antilock systems used for many years in passenger cars). One truck manufacturer has reported average miles between failures on fleet testing to be 89,000 miles (176,000 miles in operations within the continental United States). A manufacturer of antilock equipment reported in February 1974 that over 8,000 of its air brake skid control systems are in field use, with excellent reliability experienced. Neither this manufacturer nor any other has reported any highway accident which was attributed to a malfunction of the antilock system.

General Motors included in its list of antilock failures incorrect test procedures, missing fuses, and warning light malfunctions. While these are not insignificant concerns, they are an indication that unfamiliarity with the new system accounts for some of the malfunctions experienced in test programs. In addition, other malfunctions reported by General Motors are believed to be the result of systems being "added on" instead of being designed into the vehicles.

General Motors and Ford reported accidents in their proving ground tests, which they believe illustrate what might happen if an antilock system malfunctions in service. The NHTSA has studied the accident information which was submitted and has concluded that these accidents occurred as a result of rear wheel lockup during panic-type, full brake application and would also have occurred if the vehicles were not equipped with antilock systems. The NHTSA concludes that the reliability of antilock systems is such that their introduction will contribute to motor vehicle safety.

Both the Ford and General Motors recommendations, as well as the other petitions which requested delays substantially greater than those proposed by the NHTSA, are excessively broad in that they would postpone all the safety benefits of the standard, because of specific problems in limited areas. The NHTSA proposal, by comparison, proposes only those modifications which are essential to implement the standard as rapidly and fully as possible.

Because there was only a short interval between the latest proposal and the effective date of the standard in which to implement any modification of the standard, the proposal included a blanket 4-month delay of the standard's effective date for all affected vehicles. International Harvester, the largest manufacturer of air-braked vehicles that commented on the proposal, indicated agreement with the 4-month delay and stated their intention to build vehicles which comply with the standard after that date. General Motors noted the possibility that axles and the larger foundation brakes necessary to meet the standard would be available. The major supplier of axles to the truck and bus industry has estimated that, with no margin for error, some axles could be ready for January 1, 1975. The NHTSA has evaluated the current industrial shortage and leadtime problems precipitated by factors beyond manufacturer control and has concluded that a March 1, 1975, effective date as it applies to powered vehicles is necessary to allow the orderly implementation of Standard No. 121. The NHTSA cannot agree with Blue Bird Body Company that smaller manufacturers should automatically be granted a year to meet the standard following the availability of production components for Standard No. 121.

The NHTSA has also determined that the proposed requirement that the test reservoir pressure reach 60 psi in 0.25 sec cannot be implemented prior to this effective date, and the proposal is therefore withdrawn. The modification of systems to achieve this requirement could negate the compliance test data which has been accumulated by many manufacturers.

Most comments which requested a longer delay of the effective date or more specific relief were addressed to the problems of specific vehicle types. There were no specific comments, however, on the proposed 1-year delay in the applicability of the standard to fire fighting vehicles. Accordingly, the standard is amended to apply to fire fighting vehicles only after September 1, 1975.

The comments on "special permit" vehicles (defined in the proposal having a 108-inch overall width or a 24,000-pound gross axle weight rating (GAWR), centered on the inadequacy of the definition when applied to "heavy hauler" trailers. Trailers are dealt with in a separate notice of proposed rulemaking published in today's *Federal Register*. The few comments addressed to "special permit" trucks favored the September 1, 1976, effective date, but suggested more time might be necessary to acquire the necessary components because of their low priority in suppliers' engineering programs. At this time the NHTSA amends the standard to grant these vehicles a September 1, 1976, effective date. Any supply problems beyond that will be considered at a later time as they arise.

On/Off-Highway Vehicles: Comments on the proposal to substitute dynamometer requirements for stopping distance requirements until September 1, 1975, for trucks that have a front steerable axle with a GAWR of 16,000 pounds or more, or a front steerable drive axle, fell into two groups. Comments either argued that the delay was insufficient, particularly with regard to front steerable drive axles, or they objected to particular aspects of the relaxed interim requirements.

The NHTSA has decided to maintain the September 1, 1975, date for the full stopping distance requirements. An evaluation of all available information in this area indicate that air brake components will be available to meet the required level of performance for vehicles in this category.

Manufacturers raised objections to the proposed interim requirements as they were expressed in S5.3.1.2 and S5.7.2.3.1. Wagner Electric, General Motors, White, and Diamond Reo requested clarification that the S5.3.1.2 requirement would apply to "straight" trucks as well as towing vehicles. The language of S5.3.1.2 makes clear that any trucks in the described category need not meet certain stopping distance

requirements if their brakes conform to the formula in S5.4.1.

Wagner, Mack, and Abex questioned the proposed requirement that the dynamometer values be applied to each axle system separately, instead of being summed for the entire vehicle braking system. The axle-by-axle dynamometer approach was specifically included in the proposal to ensure that brakes would be provided on the front axle and not to minimize braking on the rear axle. Therefore this section is modified to require a certain level of performance for the front axle and a sum total of performance overall. If a specific value were not required for the front axle, manufacturers would be tempted to make minor modifications of present front axle systems and thereby avoid the opportunity to gain experience with the newer, stronger foundation brakes and axles.

The language "the brakes on each wheel" in S5.3.1.2 confused Abex with regard to the dynamometer test requirements. To clarify the requirement while in no way changing it, the wording is amended to "its brakes."

In answer to Wagner's request for a definition of "axle system", the term is used in the same sense as it is used in the definition of GAWR found at 49 CFR § 571.3. "Axle system" is used instead of "axle" to avoid confusion in situations where a suspension system does not employ an axle. The term has not created difficulty in the GAWR definition.

The S5.7.3.2.1 requirement for dynamometer testing in place of emergency stopping performance testing parallels the S5.3.1.2 requirement. General Motors has pointed out, however, that dynamometer testing of spring brakes often found in emergency brake systems is impracticable. Wagner also points out that the requirement can be viewed as redundant in view of S5.3.1.2. In view of these objections, the NHTSA concludes that retention of the emergency stopping requirement (except for the stopping distance) would be preferable to a dynamometer requirement. For the interim period, therefore, the vehicle will be required to come to a stop within the 12 foot lane using its emergency braking system.

Highway Trucks and Buses: For powered vehicles that do not fall in the categories treated above, the proposal would have lengthened stopping distance requirements 5 percent to compensate for the variations expected in early production components that affect stopping performance. Most manufacturers argued that the 5 percent longer distances would be required for the indefinite future, because production variations would continue to affect performance significantly. The NHTSA established the stopping distances on the basis of the ability of available equipment, and expects that experience in the production of these components will lead to predictable quality and the assurance that a vehicle will in fact perform as well as it is designed to.

White Motor Company suggested a clarification of S5.3.1.3 and S5.7.2.3.2 to make clear that the test procedures for the proposed Table V stops are identical to those in S5.3.1 for the Table III stops. The change has been made without in any way changing the requirements.

Other Issues: Two proposals which affected most trucks and buses were the brake actuation time of 0.35 sec and the option of a manual pressure reduction valve to limit air pressure to the front axle. Nearly all manufacturers supported the 0.35-sec actuation time for trucks and buses and requested that it also be extended to trailers. The NHTSA amends the standard as proposed for truck and bus brake actuation. Trailer brake actuation requirements will not be changed, however, in light of the imminence of the effective date and the consequent need for stability in the standard.

The manual pressure reduction valve proposal was not supported as expected. Even Ford and General Motors, who questioned the safety of high-torque front brakes, did not agree that the valve would have a positive safety benefit. In view of the sharp disagreement in the comments over the usefulness of the valve in the hands of different drivers, the proposal is withdrawn.

In the course of their comments on the proposal, several manufacturers and suppliers indicated uneasiness about the policy of the NHTSA with regard to isolated failures of components that have been certified as complying with Standard No. 121. Some comments expressed a belief

that the NHTSA was adopting or announcing a new policy regarding compliance, with reference to a panel discussion at the February 25, 1974, meeting of the SAE in Detroit. The remarks in question, by an NHTSA Assistant Chief Counsel, were to the effect that the agency expects that each manufacturer will design his vehicles and his test program so as to constitute due care that each of his vehicles complies with the standard. That is not a new policy, however, but merely a statement of the requirements of the National Traffic and Motor Vehicle Safety Act, which has been followed continuously by this agency. The NHTSA has avoided a rigid position that each failure necessarily constitutes a violation of the Act, just as it has the position that some percentage of failures is automatically "allowable." What constitutes due care in a particular case depends on all relevant facts, including such things as the time to elapse before a new effective date, the availability of test equipment, the limitations of current technology, and above all the diligence evidenced by the manufacturer.

All interested persons should note that, although a proposal was necessary with regard to changes for trailer manufacture, the NHTSA does not intend to make any other amendments of Standard 121 before its effective date.

In consideration of the foregoing, Standard No. 121 (49 CFR 571.121) is amended. . . .

Effective Date: September 1, 1974, for trailers; March 1, 1975, for trucks and buses.

(Secs. 103, 119, Pub. L. 89–563, 80 Stat. 718; 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on May 14, 1974.

James B. Gregory
Administrator

39 F.R. 17550
May 17, 1974

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems

(Docket No. 74–10; Notice 4)

This notice amends Standard No. 121, *Air brake systems*, 49 CFR 571.121, to delay the effective date of the standard as it applies to air brake-equipped trailers until January 1, 1975.

The January 1, 1975, effective date was proposed in a notice published May 17, 1974 (39 F.R. 17563) which invited comments on the proposal until June 17, 1974. On the basis of urgent requests by manufacturers and the Truck Trailer Manufacturers Association, a new comment closing date of June 4, 1974, was established for the effective date issue (39 F.R. 18664, May 29, 1974). The separate issue of a new "heavy hauler trailer" category is still subject to the June 17 date for comments, and further action will be decided on after that date.

Only three commenters, out of the fifty who responded, opposed the 4-month postponement. These three were suppliers to the trailer industry who claimed that they were ready to provide the needed components by September 1, 1974, and stated that a delay in the effective day would entail additional costs to them. The NHTSA finds, however, that the September 1, 1974, date does not provide sufficient time for an orderly transition to production of the trailers with the new components, and that a delay until January 1, 1975, is therefore in the interest of motor vehicle safety.

In consideration of the foregoing, the effective date of Standard No. 121 (49 CFR 571.121) is changed from September 1, 1974, to January 1, 1975, as it applies to trailers.

(Sec. 103, 119, Pub. L. 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on June 6, 1974.

Robert L. Carter
Acting Administrator

39 F.R. 20380
June 10, 1974

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems

(Docket No. 74–10; Notice 5)

This notice amends Standard No. 121, *Air brake systems*, 49 CFR 571.121, to delay the effective date for a category of specialized trailers whose configuration makes compliance with the standard particularly difficult until September 1, 1976. A new definition is added to the standard to define the specialized "heavy hauler trailer" category.

The definition and effective date were proposed in a notice published May 17, 1974 (39 F.R. 17563). The proposed definition read:

> "Heavy hauler trailer" means a trailer with one or more of the following characteristics:
>
> (1) Its brake lines are designed to adapt to separation or extension of the vehicle frame; or
>
> (2) Its body consists of a platform whose primary cargo-carrying surface is not more than 40 inches above the ground in an unloaded condition.

None of the comments directly addressed to specialized trailers objected to the 1976 date.

Wagner Electric suggested that the definition could be misconstrued to include trailers with bodies that consist of a cargo-carrying surface and sides and a header. It does appear that the definition can be more specifically stated, permitting only a header for safety purposes, and sides of a temporary nature. The definition has been modified accordingly.

Some comments recommended broadening the reach of the definition to higher trailers. Nabors suggested a specific exemption for pole trailers. Kornylak requested exemption of its Stradolift vehicle, and Bankhead requested exemption of auto-hauling trailers.

The suggestions to expand the definition to specific trailer types would broaden the exemption beyond what is necessary to implement the standard. The definition presently reflects the necessary design characteristics of specialized trailers which, as a whole, require more development before they can comply with the standard. Hauling automobiles, for example, does not require 15-inch wheels. A pole trailer which is not extendable does not require longer brake actuation and release times than the standard highway van.

Other comments recommended raising the 40-inch bed limit to accommodate more vehicles. The NHTSA has concluded that trailers with beds higher than 40 inches (including trailers whose beds are below 40 inches over the wheels but higher than 40 inches over the fifth wheel) can accommodate the new larger brake packages available at this time.

In consideration of the foregoing, Standard No. 121 (49 CFR § 571.121) is amended by a modification of the paragraph on the applicability of the standard and by the addition of a new definition. . . .

Effective date: January 1, 1975. It is found that this amendment causes no additional burden to manufacturers and, because the general effective date of the standard for all trailers is January 1, 1975, this delay of effective date for certain trailers must be effective sooner than 180 days of issuance and no later than January 1, 1975.

(Sec. 103, 119, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

Issued on July 30, 1974.

James B. Gregory
Administrator

39 F.R. 28161
August 5, 1974

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems

(Docket No. 74–10; Notice 6)

This notice responds to six petitions for reconsideration of recent amendments to Standard No. 121, *Air brake systems*, 49 CFR 571.121, which established a March 1, 1975, effective date for trucks and buses, and optional interim requirements until September 1, 1975, for trucks with certain heavy or front steerable drive axles. In addition, this notice also responds to several questions on the burnish procedure recently raised by International Harvester.

The NHTSA established the March 1, 1975, effective date for trucks and buses after comprehensive consideration of numerous petitions from manufacturers and users of air brake-equipped vehicles (39 F.R. 17550, May 17, 1974). Manufacturer concerns centered on the availability and reliability of components involved in the new brake systems, particularly antilock devices, and on leadtime necessary to modify vehicles to accept these components.

Ford Motor Company is the only manufacturer of air brake-equipped trucks which petitioned for reconsideration of the March 1, 1975, implementation date for the standard's basic provisions. After the time for petitions for reconsideration had closed, Chrysler Corporation reported on an accident which occurred during certification testing of a vehicle equipped with antilock devices, and urged the delay of Standard No. 121 for an indefinite period. The American Institute of Merchant Shipping also requested an indefinite delay in the standard's implementation.

Ford petitioned for a further 6-month delay in the standard as it applies to truck-tractors, and a one and one-half year delay as the standard applies to other trucks and buses. Ford asserts that the suspension and brake modifications necessary to meet the dry-stopping distance requirements will compromise vehicle handling and stability, increase the danger of load shifts, and force the introduction of antilock devices before Ford considers them reliable. The requested extension would be used to evaluate the effect of the new componentry on overall safety.

The issues in the Ford petition have been carefully considered by the NHTSA in the process of rulemaking and, with the exception of load shifting, were addressed in the preamble to the amendments which established the March 1, 1975, date. The NHTSA has reviewed each of Ford's concerns, and concludes that implementation of the standard as scheduled for trucks and buses is reasonable, practicable, and meets the need for motor vehicle safety.

With regard to the handling and stability problems experienced by some short-wheel-based vehicles in meeting the stopping distance requirements, the NHTSA maintains its determination that adequate time has been made available to make the major redesign necessary in some vehicles, or to make the decision to discontinue the production of models which are simply too short to meet the requirements despite design changes. International Harvester, in its comments on the rulemaking, indicated that it had been ready to meet the proposed January 1, 1975, effective date and would actually suffer economic losses in waiting for the March 1, 1975, implementation.

The availability and reliability of antilock systems which will be used by many manufacturers in meeting the requirements was questioned by Ford in its petition. In response to Ford's assertion that a manufacturer's report on field experience with 8,000 antilock units does

not appear in the record, a letter from Kelsey-Hayes (February 1, 1974) containing this information was placed in the NHTSA Docket Section before March 1, 1974. The NHTSA continues to monitor antilock production and testing and cannot agree that the evidence indicates antilocks will decrease the safety of the new trucks in highway operation. Since May, the NHTSA engineering staff has visited six of the seven major antilock manufacturers to discuss antilock reliability and availability. At least half of these manufacturers pointed out that their plants were prepared for full production to meet the September 1, 1974, date, and that they had had to delay production schedules because of the six-month delay. Low volume production is presently available to vehicle manufacturers for their testing and evaluation.

Concerning antilock reliability, a substantial amount of proprietary information was reviewed as well as the publicly-known information that no highway accident has been attributed to the failure of antilock devices. Kelsey-Hayes pointed out that it is selling approximately 250 axle units each month for retrofit. Following these visits, the NHTSA sent the seven major antilock manufacturers requests for reliability data under its investigatory authority, which will become part of the record although it may be of a proprietary nature which would justify not making it public. This data will show millions of axle miles of antilock operation with a malfunction rate comparable to other equipment presently in highway service, and no highway accidents attributable to the device.

Chrysler Corporation reported on a proving-ground accident on May 16, 1974, in which an antilock-equipped truck rolled over after its rear wheels locked and caused skidding during a stop from 60 mph. The manufacturer of the antilock system reported that the device functioned as it was designed to but in response to a false signal. The important point, however, as noted in the May rulemaking, is that the accident occurred as a result of rear-wheel lockup during a panic-type, full brake application that would also have occurred if the vehicle had not been equipped with antilock. In other words, a panic stop always involves the risk of uncontrolled skid due to lockup, and the presence of the antilock only improves the chances of a safe stop in the vast majority of instances in which it functions properly.

Ford requested an interpretation of S5.5.1 of the standard that would permit use of a pressure limiting valve to the front axle that operates when it senses electrical failure of the antilock system. The NHTSA has advised Ford (and Bendix Corporation) that S5.5.1 does not prohibit use of such a valve designed to operate in the event of electrical failure.

Ford also raised the problem of load shift under heavy braking. The NHTSA has considered the effects of the standard and notes that, under normal circumstances, stops will continue to be made at the same deceleration as in the past, consistent with driver comfort and load stability. Only in emergency situations will the full torque of the new brakes be utilized and in this event, the NHTSA concludes that the shorter stopping distances outweigh the possible safety problem of load shift.

The Ford petition pointed out that any failure of component manufacturers to supply the new 121 components would make compliance with the standard impossible. As of this date the NHTSA finds that supplier production is on schedule and will provide components on time. As recently as July 26, 1974, Rockwell International assured the NHTSA that its production is on schedule.

For these reasons the Ford petition and Chrysler request are denied. The NHTSA would like to establish the issuance of this notice as the final form of Standard No. 121 with regard to its effective date and the stopping distance requirements, for purposes of review under § 105(a)(1) of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. § 1394). Thus, while several areas treated later in this notice will be subject to further reconsideration, the effective dates and stopping distance requirements will be final as to any person who will be adversely affected by them.

While International Harvester supported the March 1, 1975, date for standard highway trucks and buses (it would have preferred a January 1,

1975, date), they did petition for reconsideration of the NHTSA decision to apply the full stopping distances to vehicles equipped with front steerable drive axles after September 1, 1975. White Motor Company and Diamond Reo Trucks, Inc., also petitioned for 1 year's delay in implementation of the full requirements for these axles.

The majority of front steerable drive axles are found on vehicles which use the road regularly at highway speeds and which require the same stopping capability as lighter vehicles. In most cases, their non-planetary construction permits an uncomplicated adaptation to the standard's torque requirements. Furthermore, one vehicle manufacturer indicates that it has successfully redesigned steerable drive axles in the 18,000- to 23,000-pound GAWR range to meet Standard No. 121. White, International Harvester, and Diamond Reo state that the lighter axles in this category are unavailable, but not technically unfeasible. The unavailability stems from supplier decisions to concentrate on the more common non-driving axles found on standard highway vehicles in great numbers. An August 8, 1974, letter from Rockwell Standard to Docket 74–10 supports the conclusion that the axles can be manufactured, but will not be available until September 1, 1976. Accordingly, the NHTSA has reconsidered the present effective date of September 1, 1975, for full requirements applicable to front steerable drive axles and delays for one year the full requirements for those axle sizes which are not available until September 1, 1976.

Diamond Reo and White also requested reconsideration of the implementation of full requirements for vehicles equipped with a front steerable non-driving axle with a GAWR of 16,000 pounds or more, which are subject to interim dynamometer requirements from March 1, 1975, to September 1, 1975. The manufacturers base their requests for a 1-year delay on difficulties in securing a proven brake assembly capable of handling the higher torque levels. B. F. Goodrich recently dropped development of its heavy air-over-hydraulic disc brake system, to which at least one truck manufacturer, White Trucks, was committed. White states that disc brakes are necessary for heavy front axles and has encountered severe axle-to-axle imbalance problems in its attempts to use other disc brake assemblies at this date. A major axle supplier has notified the NHTSA that the axle itself can be ready by September 1975.

The NHTSA has evaluated the foundation brake assemblies available to this vehicle group and concludes that a year's field testing and experience is necessary and desirable to assure that the new components will perform as designed when placed in highway service. For this reason the full requirements of Standard No. 121 will become effective for vehicles with a front steerable axle of 16,000 pounds GAWR or more on September 1, 1976.

With regard to this vehicle group, International Harvester claimed that the requirement that the brakes be "fully applied" was unfairly introduced into the interim requirements and interferes with braking action. Apparently full pressure applications may cause erratic behavior in some large vehicles with very light bodies, during dry stops in the unloaded condition.

Full application is required to ensure that vehicles provide the lateral tractive capability of an unlocked wheel during panic braking. This interim requirement was proposed in March 1974 as relief from full requirements which have been in effect since February 1971. The NHTSA does not consider it unfair to propose and make final an optional stopping requirement which represents relief from more stringent requirements. More important, the NHTSA considers it crucial to maintain complete directional stability in a panic stop, loaded or unloaded, if the vehicle is unable to meet the stopping distance requirements in that condition. Accordingly, the International Harvester petition is denied.

Diamond Reo also requested that the interim stopping distances for standard highway vehicles be adopted as the full requirements. Their vehicles meet the shorter distances but not by a sufficient margin to absolutely assure them that every one of their vehicles will pass. The fact that the vehicles are capable of stopping well within the shorter distances persuades the NHTSA that this safety level can and should

be maintained. Manufacturers are required by the Safety Act to "exercise due care" in certifying that vehicles comply with the applicable standards (15 U.S.C. § 1397(b)(2)). In view of the statutory language, Diamond Reo's request for reconsideration is denied.

In a related matter, the NHTSA has been asked by the *Federal Register* to redesignate the present Table V as Table IIa, which is accomplished in this notice.

Manufacturers raised several matters which were not addressed by Notice 2 and are not, therefore, properly raised as petitions for reconsideration. The NHTSA finds it desirable, however, to respond to them in this notice, in view of the standard's imminent effective date.

Most important was a question by International Harvester in a July 27, 1974, visit by NHTSA engineers to their plant. They indicated that some 121 vehicles may have difficulty in achieving the required burnish temperatures because of the use of the automatic pressure limiting valve that tailors the torque at the front axle. The burnish conditions of Standard No. 121 essentially standardize the preparation of new truck, bus, and trailer brakes for testing under the standard.

In the absence of a specification for these valves, it appears that manufacturers have instituted various practices to assure uniformly good burnishes. It is apparent that different vehicles respond to the burnish procedure with distinctive problems and require solutions tailored to their particular brake packages.

From a regulatory standpoint, however, an optional procedure complicates enforcement of a standard, particularly where a manufacturer has tested one way and the NHTSA tests the other. Test results with the limiting valve, for example, may not be easily comparable with test results in which the valve was bypassed. Both the manufacturer and the NHTSA need a specification that permits flexibility in achieving a uniform burnish in different vehicles, but does not permit two burnish options.

To end this confusion, the NHTSA further specifies the burnish procedure to require that a limiting valve be in use except in the event the temperature of the hottest brake on a rear axle exceeds the temperature of the hottest brake on the front axle by 125° F. In this way the manufacturer and the NHTSA will follow the same test procedure. It should be emphasized that this specification in no way invalidates the testing undertaken to date. Such data can be the basis of certification.

In answer to another International Harvester question, brake adjustments can be made during the burnishing to control brake temperatures. It should be noted that NHTSA is considering a limit on adjustments to three, to be made only during the first 250 snubs. Finally, the NHTSA has indicated to Kelsey-Hayes that it would add "after-stop" to the burnish procedures to describe the specified temperatures more precisely. The NHTSA intends to measure the temperatures within 30 seconds of brake release, but will not reject manufacturer readings taken at any time if they are reasonably related to the temperatures actually generated by the snubs. This latitude is necessary to avoid invalidation of manufacturer testing up to this time.

International Harvester asked that the parking brake requirements of S5.6.2 be modified to require 20 percent grade holding ability "to the limit of traction". The NHTSA has determined that the present grade holding capability is desirable, and it has already provided an alternative requirement in the standard that brakes with a specified static retardation force be provided on all axles. The NHTSA concludes that the option makes a reduction of the grade-holding requirements unnecessary.

Diamond Reo requested that air reservoir volume on trucks and buses be reduced from present requirements. The NHTSA has already reduced the volume from 16 times the combined service brake chamber volumes to 12 times that volume, and concludes that a further reduction is not in the interests of motor vehicle safety. The Diamond Reo request concerning the antilock electrical circuit has already been answered by a letter denial of June 28, 1974.

Wagner Electric requested a minor revision of Figure 1, Trailer Test Rig, which the NHTSA makes in the interests of consistency of terminology. The word "control" is subetituted for "pedal".

Finally, the NHTSA has been receiving some indications that manufacturers may arbitrarily specify a higher GAWR than normal simply to avoid requirements of the standard. The NHTSA therefore takes this opportunity to explain the manufacturer's responsibility to specify the GAWR of axle systems on his products.

The NHTSA defines gross axle weight rating as follows:

> "Gross axle weight rating" or "GAWR" means the value specified by the manufacturer as the load-carrying capacity of a single axle system, as measured at the tire-ground interfaces.

Because the GAWR is measured at the tire-ground interfaces, it means that the tires, wheels, brakes, and suspension components are included in the determination. It is obvious that the GAWR of the whole system cannot exceed the rating of any one component, such as tires. Both the NHTSA in its compliance tests and defects investigations, and the Bureau of Motor Carrier Safety on the road, will judge the vehicle on the basis of the values assigned. Therefore it is in the interest of the manufacturer to assign values which accurately reflect the load-bearing ability of the vehicle and its tires and suspension.

In consideration of the foregoing, Standard No. 121 (49 CFR 571.121) is amended. . . .

Effective date: March 1, 1975. Because the Standard's effective date for trucks and buses occurs sooner than 180 days and because these amendments create no additional burden, it is found for good cause shown that an earlier effective date than 180 days from the date of publication is in the public interest.

(Sec. 103, 119, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

Issued on November 6, 1974.

James B. Gregory
Administrator

39 F.R. 39880
November 12, 1974

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems

(Docket No. 74–10; Notice 11)

This notice amends Standard No. 121, *Air brake systems*, 49 CFR 571.212, to establish a new test category (and an effective date) for highly specialized tractor-trailer vehicle combinations, and to specify modified brake retardation force requirements for trailers until September 1, 1976.

The National Highway Traffic Safety Administration (NHTSA) proposed these actions, along with other actions that deal with specialized trucks, in a notice published November 14, 1974 (39 F.R. 40168). The NHTSA is acting as soon as possible on the retardation force and integral tractor-trailer issues because they directly affect the manufacture of trailers, which will be subject to the standard's requirements on January 1, 1975. The issue of exemption for oversize and specialized trucks (which have a March 1, 1975, effective date) will be addressed in the near future by a separate notice.

The NHTSA takes note of its recent proposal and request for comments on a postponement of this standard (39 F.R. 43639, December 17, 1974). The NHTSA is proceding with this rulemaking action independently of that proposal to maintain as much continuity as possible in the regulation as presently issued.

The manufacturers and users of auto transporter combination vehicles and the Truck Trailer Manufacturers Association supported the proposal to exempt "integral tractor-trailers" from applicability of the standard until September 1, 1976, because of their particular testing difficulties. It has been suggested that the term "integral tractor-trailer" should be replaced by a more descriptive designation of the combination vehicles in question. The NHTSA agrees and modifies the definition to refer to the transportation of motor vehicles, and to change the defined term to "auto transporters." The comments requested deletion of a requirement in the definition which limited these vehicles to those designed "by a single manufacturer, or person who alters a certified vehicle." The comments expressed concern that the phrase would eliminate the manufacture of tractor and trailer portions separately. Some manufacturers also believed that the reference to "certified vehicles" meant that any incomplete truck tractor equipped with 121-type equipment would have to be certified upon completion by the manufacturer of auto transporters.

The cited requirement does not exclude manufacture by separate individuals of the two portions of the combination, although the preamble inadvertently referred to "trucks and trailers manufactured by a single manufacturer for use in combination." It is possible that one or more persons other than a vehicle manufacturer or alterer may be responsible for the integral design. The NHTSA therefore deletes the phrase in question to permit continued flexibility in the design of these vehicles.

The reference to alteration of a "certified vehicle" confused some businesses which modify stock truck-tractors for use in auto transporters. They believed that a completed vehcile that had been certified to meet Standard No. 121, or an incomplete vehicle with documents referring to Standard No. 121, could not qualify for an exemption as a portion of an auto transporter. In actuality, a complete and certified vehicle, or an incomplete vehicle, can be modified to become a portion of an auto transporter, which would thereby qualify for exemption whatever its previous status.

Bankhead Transportation requested clarification with regard to manufacture of new auto transporter trailers to be fitted to existing truck tractors that are modified to accept the new trailer, These trailers constitute a portion of an auto transporter and as such are exempt until September 1, 1976. The NHTSA has modified the language of S5.3 in one respect from that proposed, to make clear that a transporter trailer manufactured without an equivalent transporter tractor would be tested separately under the requirements of S5.3.2 after September 1, 1976.

The NHTSA also proposed that the retardation force requirements of the standard, which apply to trailers (and, of an optional basis, to a small category of large trucks until September 1, 1967), be somewhat reduced because of the degree of variability being experienced in brake lining performance. The NHTSA requested comments on lower values and on whether such new values should be permanent, or only temporary while further information is developed on variability.

With the exception of General Motors Corporation and Automotive Research Associates, Incorporated (which suggested changes in dynamometer procedures instead of values), the commentors supported the reduction of retardation force values for trailers. General Motors argued that brake force reductions of the trailer should not be undertaken without similar reductions in stopping distance requirements for trucks, and is particular towing vehicles.

The NHTSA, in an amendment published May 17, 1974 (39 F.R. 17750), has already acknowledged the variability of production brake assemblies on trucks and buses by establishing longer stopping distances for an interim period until September 1, 1975. The NHTSA recently denied a petition by Diamond Reo to make these longer distances the permanent values of the standard (39 F.R. 39880). A Paccar Corporation petition presently under consideration on the subject of stopping distances also raises the issue of relaxed stopping requirements. The NHTSA concludes that its decision on that petition will be responsive to the points raised by General Motors.

Several comments on the proposed lower retardation forces included data that further substantiate the determination that variability of brake linings is not sufficiently small to permit 100 percent compilance of every brake assembly at the present values. Wagner Electric Corporation, which originally petitioned for use of the values proposed by the NHTSA, has submitted new data which support a slightly lower minima force level to support the desired mean performance of approximately 60 pounds. Data supplied by Raybestos Manhattan demonstrate a variability to the 3-sigma limit of slightly more than 20 percent calculated by the NHTSA on earlier testing. Molded Materials Company disagreed that compatibility of combination vehciles required 60 percent mean retardation values, but supported the proposed lower minimum force levels as a means to achieve compatibility. Abex Corporation supported the lower values so that actual production experience could be accumulated as a basis for future changes.

The NHTSA concludes on the basis or submitted data that values slightly lower than those proposed will better accommodate the demonstrated variability of brake lining material. Therefore, values of 0.06, 0.13, 0.20, 0.27, 0.34, 0.41, and 0.47 will replace the present values for trailers.

Manufacturers and users of brake lining differed on whether the new values should permanently replace the previous values. The NHTSA did not receive conclusive information indicating that the variability in performance will remain in production units. The NHTSA concludes, therefore, that interim values will permit the accumulation of significant field experience on vehicle compatibility and lining variability, and that a judgment will be made on the basis of that data in the future.

Only Kelsey-Hayes commented on the proposal to apply these new retardation force values to trucks with heavy (or driving) front axles during their interim requirements. As a manufacturer of front axle brake assemblies for this vehicle category, Kelsey-Hayes pointed out that the revision was not supported for truck front axle brake assemblies and would require an unjustified retooling for a period of no more than 18 months. The NHTSA agrees that the data underlying the proposal supports a modification for trailer brake assemblies only. Accordingly

the NHTSA does not reduce the optional interim retardation force requirements for trucks specified in S5.1.3.2.

In a separate matter, Rockwell International Corporation asked whether the discussion of 100 percent compliance with Standard No. 121's retardation force requirements was a modification of earlier NHTSA discussion on the "due care" responsibility of each manufacturer to ensure that each of his products meets the requirements of the standard (39 F.R. 17750, May 17, 1974). The requirement to exercise "due care" that each vehicle comply with Standard No. 121 is a statutory requirement (15 U.S.C. 1397), and the above-cited discussion remains the NHTSA position.

In consideration of the foregoing, Standard No. 121 (49 C.F.R. 571. 121) is amended. . . .

Effective date: January 1, 1975. Because of the imminent effective date of the standard for trailers (January 1, 1975), the National Highway Traffic Safety Administration finds, for good cause shown, that an effective date sooner than 30 days is in the public interest.

(Sec. 103, 119, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 C.F.R. 1.51)

Issued on December 31, 1974.

James B. Gregory
Administrator

40 F.R. 1246
January 7, 1975

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

(Docket No. 74–10; Notice 12)

Air Brake Systems

This notice amends Standard No. 121, *Air brake systems*, 49 C.F.R. 571.121, to delete as of September 1, 1976, the emergency brake option that for trucks and buses permits automatic application of the parking brakes in place of a modulated emergency brake system. A notice of proposed rulemaking to be issued shortly proposes modification of the air brake system parking brake requirements and the trailer emergency braking requirements.

Based on a December 1972 petition from the American Trucking Associations (ATA), the NHTSA proposed elimination of the automatic parking brake for use as an emergency braking capability (38 F.R. 14963, June 7, 1973). In response to comments on that proposal which stated that leadtime was insufficient to implement the proposal by September 1, 1974, the NHTSA indicated it would defer final action to a later date and issue any changes with an effective date beyond September 1, 1974 (39 F.R. 804, January 3, 1974). The NHTSA again indicated in May 1974 that "the majority of the changes proposed in response to the ATA petition continue to be viewed favorably." (39 F.R. 17550, May 17, 1974). The NHTSA has now completed its consideration of the modulated braking provision and hereby amends the standard as proposed in June 1973, with an effective date of September 1, 1976, to permit adequate time for engineering necessary changes. It appears, in fact, that the majority of new brake systems are designed to meet generally the modulated emergency brake requirements.

The fundamental change is elimination of the option that permits automatic application of the parking brakes in place of a modulated emergency brake system. The NHTSA agrees with the ATA that a driver should not be forced to use two different methods of applying the emergency brakes, depending on what vehcile he is driving at the time.

In the pariknq brake system proposal to be published shortly, it is proposed that the parking brake provisions found as options in the present S5.7 be made mandatory in a revised S5.6 parking brake section. Thus the present S5.7 requirement that a vehicle with a modulated brake capability also have a parking brake capable of manual application at any service reservoir pressure level would be found in the parking brake section. Also the requirement that the parking brake be capable of application in the event of a failure of specific components common to the service brake and emergency braking systems would be moved to the revised parking brake section. Finally the requirement that a parking brake be releasable only if it can be reapplied would be found in the new parking brake provisions.

Several other requirements proposed in June 1973 for the modulated emergency brake system are found in this amendment. The modulated emergency brake must be applied, released, and be capable of modulation, by means of the service brake control. The NHTSA has concluded that the driver is most likely to maintain the best control of his vehicle when he can modulate any braking available to him througd a single control. The emergency system must be capable of two full applications and releases in the event the service brake system fails. This ensures that a disabled vehicle can be safely moved off the roadway.

As proposed in June 1973 and made final in this notice, the emergency brake system of a

towing vehicle must operate in the event the trailer air control line or the trailer supply and control lines fail. These requirements ensure that a loaded combination vehicle can stop in specified distances with a failed control line, and that a loaded straight truck (capable of towing) or "bobtail" tractor-trailer is capable of stopping in the event a trailer breaks away. Additionally, the service brake control of a towing vehicle must be capable of modulating the brakes on a towed vehicle following a failure on the towing vehicle. Also, the emergency stopping distance requirement presently in the standard becomes the only permissible test of a truck or bus emergency braking system.

A new test condition has been added to specify when to vent the control and supply lines to atmosphere for test purposes.

As noted above, the majority of these changes appear to be incorporated in large measure in the design of the new brake systems. The NHTSA concludes that truck and bus manufacturers are capable of meeting these modulated brake requirements by September 1, 1976.

In consideration of the foregoing, Standard No. 121 (49 C.F.R. 571.121) is amended. . . .

Effective date: September 1, 1976.

(Sec. 103, 119 Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407), delegation of authority at 49 C.F.R. 1.51 and 49 C.F.R. 501.8).

Issued on January 10, 1975.

James B. Gregory
Administrator

40 F.R. 2989
January 17, 1975

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems

(Docket No. 74–10; Notice 14)

This notice amends Standard No. 121, *Air brake systems*, 49 C.F.R. 571.121, to exempt a small category of oversize and construction vehicles from the applicability of the standard. The exemption criteria were proposed in a January 28, 1975, notice (40 F.R. 4153), which expanded the criteria for this specialized vehicle category in response to comments on an earlier exemption proposal (39 F.R. 40168, November 14, 1974).

In making the proposal, the NHTSA tentatively determined that the specialized configuration of this small category makes compliance with the standard so difficult and expensive that an exemption from the standard would be justified. It was noted that the vehicle function in these cases generally results in restricted operation on the highway (e.g., at low speed, in permit operation, or during daylight hours) and that as a result, vehicle exposure on the highway is limited.

The NHTSA proposed a series of criteria intended to comprehensively identify vehicles with these characteristics. Permanent exemption would be granted to any vehicle that has (1) an overall vehicle width of 108 inches or more, (2) a speed attainable in two miles of not more than 33 mph, (3) a speed attainable in two miles of not more than 45 mph, all-wheel drive, and no cargo- or passenger-carrying capacity, (4) an axle that has a GAWR of 29,000 pounds or more, (5) two or more front steerable axles with a GAWR of 16,000 pounds or more for each axle; or (6) a steerable drive axle driven through gear reduction contained within the wheel.

Three of the numbered criteria ((3), (5), and (6)) were intended to describe the lighter and more maneuverable vehicles whose drive axle configuration or high center of gravity make conformity with the standard expensive and difficult. An example of this vehicle type is the large, carrier-mounted mobile crane. Based on submitted comments, it appears that these criteria should be combined as a single compound criterion in order to avoid inequities in the applicability of the standard. Specifically, either of the criteria numbered (5) or (6) could, of itself, permit heavy or cargo-carrying vehicles on the highway at unlimited speed without 121-type brakes while far smaller vehicles would be subject to the regulation. To accomplish the rearrangement, the exception criteria numbered (3), (5), and (6) are combined in a new category (d) to require for this exception that an expected vehicle have a speed attainable in two miles of not more than 45 mph, no cargo- or passenger-carrying capacity, and either (1) all-wheel drive, (2) a steerable drive axle driven through gear reduction contained within the wheel, or (3) two or more front steerable axles.

It is recognized that total withdrawal of the 16,000-pound tandem steerable axle exemption would make those vehicles with an unlimited highway speed unavailable until the axles are developed or the vehicle speed is reduced to 45 mph. Therefore the NHTSA will make final its proposed 16,000-pound exemption, but only for the interim period until September 1, 1976.

With regard to the 45-mph maximum speed criterion, FMC Corporation suggested that the speed be raised somewhat to ensure that vehicles excepted on this criterion can use the interstate highway system. The NHTSA does not agree that it should encourage use on the interstate system of large, high-center-of-gravity vehicles that are not subject to a minimum braking standard. Accordingly, FMC's request is denied.

Little comment was received on the other criteria. Ford Motor Company suggested a 24,000-pound figure in place of the 29,000-pound proposal. For reasons cited in the January proposal in response to an identical request by Mack this request is denied.

To the degree that this amendment does not grant the requests for exemption raised by Marmon Transmotive in its December 23, 1974, letter to the Administrator, that petition is denied.

In consideration of the foregoing, Standard No. 121 (49 C.F.R. 571.121) is amended. . . .

Effective date: March 1, 1975. Because these amendments relieve a restriction and because of the imminence of the standard's effective date, it is found for good cause shown that an effective date sooner than 30 days from the date of their publication in the *Federal Register* is in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 C.F.R. 1.51.)

Issued on February 28, 1975.

James B. Gregory
Administrator

40 F.R. 8953
March 4, 1975

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems

(Docket No. 74–10; Notice 15)

This notice amends Standard No. 121, *Air brake systems*, 49 C.F.R. § 571.121, in response to petitions for reconsideration of requirements established for trucks and buses, by revision of the retardation force requirements applicable to on/off highway vehicles until September 1, 1975, or September 1, 1976.

The National Highway Traffic Safety Administration (NHTSA) established the final form of Standard No. 121 for purposes of judicial review in November 1974 (39 F.R. 39880, November 21, 1974) (Notice 6). Notice 6 established interim stopping distance requirements for standard highway vehicles, and retardation force requirements for some on/off highway vehicles. Petitions for reconsideration of the decision were received from White Motor Corporation, Mack Trucks, International Harvester, PACCAR Corporation, Diamond Reo, and Breeze Corporations. General Motors effectively requested reconsideration in its response to a separate November notice (39 F.R. 40168, November 14, 1974) (Notice 7) by supporting reduced trailer requirements only with corresponding reduction of truck stopping distance requirements.

General Motors, in its response to Notice 7, indicated that similar 121 vehicles can register as much as a 20-percent difference in stopping distances as a result of uncontrolled variability in brake component performance. International Harvester, which until recently had supported 5-percent longer stopping distances on an interim basis, now points to certain variables, including brake linings, in requesting longer distances on a permanent basis. Diamond Reo reported the same experience in its comments to Notice 2 of Docket No. 74–10. PACCAR requested that S5.3 (stopping distance) be "temporarily repealed" and that longer stoping distances be considered for the future. The NHTSA concludes that PACCAR's request is essentially a petition for rulemaking to increase the stopping distances on a permanent basis.

These positions raise issues which can arise whenever a standard is first implemented: (1) that production variables are so great that inordinate compilance margins are required and (2) that the brake packages necessary to achieve these compliance margins are so aggressive that the handling qualities and durability of affected vehicles are significantly degraded. The NHTSA is, of course, interested in receiving on a continuing basis any new technical information (particularly test data on production vehicles) that bears on these important safety issues. Based on the information submitted to date, however, NHTSA is not prepared to grant the outstanding petitions at this time.

PACCAR also requested that the stopping distance requirements be delayed until the performance of antilock systems and certain test procedures, conditions, and the control trailer test device are specified in areas considered deficient by PACCAR. While these issues might appropriately be considered for future rulemaking, the NHTSA does not agree that change of these important elements of the standard should delay orderly implementation of the standard. Accordingly, the PACCAR request in these areas is denied.

The second area of the standard in which manufacturers seek reconsideration is limited relaxation of requirements for vehicles with front steerable drive axles (S5.3.1.2). Based on unavailability of this axle design, vehicles manufactured before September 1, 1975, with a front

steerable drive axle of any size may meet retardation force requirements in place of stopping distance requirements. Because of unavailability of the lighter front driving axles for a greater period, vehicles manufactured before September 1, 1976, with a front steerable drive axle with a gross axle weight rating (GAWR) of less than 18,000 pounds may meet retardation force requirements in place of stopping distance requirements.

Diamond Reo, International Harvester, and Mack Trucks, Inc., now request that the heavier axles also be permitted relaxed requirements until September 1, 1976. White Motor Company in its response to Notice 10 of Docket No. 74–10 requested the relaxed requirements until September 1, 1977. The NHTSA indicated in Notice 6 that this axle type is available and has been offered by Oshkosh Truck Company to the other manufacturers of this vehicle class. While Diamond Reo does not indicate it considered the Oshkosh axle, the other manufacturers indicate that redesign of their limited vehicle output in this area to accept the Oshkosh axle would be unjustified because of cost. Oshkosh, on the other hand, has offered to provide, at cost, technical assistance in the installation of Oshkosh axles to non-Oshkosh pilot test vehicles, and consultation and review of test data obtained from truck-manufacturer-conducted tests.

The NHTSA concludes, based on all information available, that the axle is available at this time and that sufficient leadtime has been made available for the location and testing of an axle of this type. The manufacturers who request further delay do not claim that the installation is technologically unfeasible or otherwise impracticable. Although they cite adverse economic consequence for the limited numbers of vehicles they produce in this category, this argument does not consider the major economic consequences for the Oshkosh Company, who state that 72 percent of their vehicle production would be adversely affected by any further delay. The petitions of White, International Harvester, Diamond Reo, and Mack are accordingly denied.

Due to unavailability until September 1, 1976, front steerable non-driving axles with a GAWR in excess of 16,000 pounds are permitted the same relaxed requirements as the driving axles just discussed. White Motor Corporation, in its comments to Notice 10 of Docket No. 74–10, requested the relaxed requirements be extended to September 1, 1977, because of the long leadtime associated with manufacture of these vehicles. The NHTSA will monitor the availability of these axles to ensure their readiness for September 1, 1976, and will consider a later effective date for them if they are not available as presently scheduled. At this time, however, it appears that the axles will be ready sufficiently in advance of September 1, 1976, to permit satisfaction of the full requirements on that date. Accordingly White's petition is denied.

As earlier noted, both the vehicles equipped with certain driving or non-driivng front steerable axles are permitted to meet retardation force requirements in place of distance requirements for an interim period. A reduction of these retardation force requirements was the subject of a proposal in Notice 7, which was acted on for trailers in Notice 11 (40 F.R. 1246, January 7, 1975). It was concluded that no argument had been made for a temporary reduction of retardation forces on the front axle of heavy trucks, most of which are integral trucks which experience high levels of dynamic load shift during braking. Comments by PACCAR to Notice 6, however, emphasized that retardation force requirements at the rear axle could be reduced because the load shift off the rear axle effectively results in over-torque of that axle.

The NHTSA's intent in substituting retardation force requirements for stopping distance is to ensure the best braking that is presently available, and it appears that rear brake retardation requirements may, in some cases, inhibit the tailoring of brake systems on different vehciles to achieve this goal. The most satisfactory means to reduce rear axle requirements while maintaining front axle requirements is to eliminate requirements for the vehicle as a whole, to permit the manufacturer latitude in selecting retardation force requireemnts at the rear axle. The present requirements for front axle retardation forces remain in the standard, and by this notice, the NHTSA deletes the requirement for retardation force values for the vehicle as a whole.

PACCAR requested complete withdrawal of the retardation force requirements, as well as the brake power and fade requirements as they affect all trucks. The NHTSA, of course, considers these characteristics of a brake system fundamental, and does not agree that the requirements are impracticable or should be withdrawn. PACCAR's request is therefore denied.

With regard to the vehicles that may meet retardation force requirements in place of stopping distances, International Harvester requested confirmation that S6.3.1.2 is an option that the manufacturer may choose to ignore in the loaded or unloaded condition if the vehcile in question meets the stopping distance requirements in that condition. This agency stated in the preamble to Notice 6 that "the NHTSA considers it crucial panic stop, loaded or unloaded, if the vehicle is to maintain complete directional stability in a unable to meet the stopping distance requirements in that condition." International Harvester's understanding of this language is correct.

PACCAR requested deletion of brake actuation requirements as redundant in view of stopping distance requirements. The NHTSA has considered elimination of the requirements previously, and concluded at that time that the requirement should be maintained (37 F.R. 3905, February 24, 1972). At this time the actuation requirements ensure fast braking on the vehicles under S5.3.1.2 which need not meet stopping distance requirements. The NHTSA will consider this PACCAR request for future rulemaking but does not act on the petition for amendment at this time.

Finally, PACCAR requested specification of antilock performance characteristics. The standard does not require antilock systems, and the NHTSA has concluded that specification for manufacturers who utilize these devices would be design restrictive, without a corresponding safety benefit. No manufacturer other than PACCAR indicates that a safety need exists to specify the cycling of antilocks, and the NHTSA is unable to determine from the PACCAR petition what evidence exists that antilock specification would improve vehicle handilng. PACCAR's petition is accordingly denied.

In areas unrelated to the petitions for reconsideration, the NHTSA corrects an error in S6.1.8.1 and adds a clarifying word to S5.7.1.2, without in any way changing the requirements of those paragraphs.

In consideration of the foregoing, Standard No. 121 (49 C.F.R. § 571.121) is amended. . . .

Effective date: March 21, 1975. Because of Standard No. 121's March 1, 1975, effective date and because this order relieves a restriction, it is found for good cause shown that an effective date sooner than 30 days from the date of publication of that order is in the public interest.

(Sec. 103, 119, 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 C.F.R. 1.51).

Issued on March 14, 1975.

James B. Gregory
Administrator

40 F.R. 12797
March 21, 1975

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems

(Docket No. 74–10; Notice 16)

This notice responds to three petitions for reconsideration of the National Highway Traffic Safety Administration's December 31, 1974, decision to implement Standard No. 121, *Air brake systems*, as scheduled on January 1, 1975, for trailers and on March 1, 1975, for trucks and buses. The petition of American Fire Apparatus Company for reconsideration of the September 1, 1975, effective date for fire fighting apparatus is granted for a period of six months. The petitions of the Milk Industry Foundation and of Representative James H. Quillen for delay of the standard as a whole are denied. The petition of White Motor Corporation has already been responded to by Notice 15 of Docket No. 74–10 (40 F.R. 12797, March 21, 1975).

The Milk Industry Foundation (the Foundation) requested delay of the standard as it applies to trucks and buses until March 1, 1976, to permit further testing of the new braking systems (and redesign as necessary) and to conduct an analysis of the economic impact of the standard. The Foundation believes that insufficient time has been allowed for vehicle testing.

The NHTSA has evaluated the readiness of manufacturers to meet the standard throughout the four years since issuance. The original January 1, 1973, effective date was delayed until September 1, 1974. In early 1974, the vehicle and component test programs involved in implementation were again evaluated, and the NHTSA proposed delay of the effective date to January 1, 1975 (39 F.R. 7966, March 1, 1974) (39 F.R. 17563, May 17, 1974). Based on submitted comments, it was determined that a March 1, 1975, effective date for trucks and buses, and a January 1, 1975, date for trailers would permit adequate time to complete preparations for the standard's implementation (39 F.R. 17750, May 17, 1974) (39 F.R. 20380, June 10, 1974). These delays were undertaken although one manufacturer expressed readiness to meet the September 1974 date, and International Harvester, the largest manufacturer of air-braked vehicles, expressed readiness to meet the January 1, 1975, effective date. This decision was reevaluated in November 1974 and found to remain valid, although a few larger vehicle types were permitted a later date (39 F.R. 39880, November 12, 1974).

The Foundation also requested that the standard be delayed until its economic impact is evaluated. The NHTSA conducted an evaluation of economic impact shortly before implementation of the standard (39 F.R. 43639, December 17, 1974) and, based on several hundred comments, concluded that the standard should be implemented (40 F.R. 1248, January 7, 1975). The NHTSA disagrees with the Foundation that the evaluation should have been conducted in accordance with Executive Order 11821 (on inflation impact studies) when the final criteria and procedures for implementation of the Order were not yet established. The NHTSA has committed itself to continue monitoring the effectiveness of its standard in accordance with its statutory mandate, with a view to identifying any modifications that would lower costs while achieving comparable levels of safety.

As indicated by the submissions of the Milk Industry Foundation, there has evidently been much confusion among user groups such as the dairy industry over the effect of the braking standards on their operations. In order to meet the requirements that a vehicle stop in a specified distance when tested by the government, chassis manufacturers have in some cases specified center

of gravity heights for conformity purposes that are lower than the loaded center of gravity of trucks that these operators are accustomed to using. The body builders who complete and certify the trucks have passed these center of gravity specifications on to the user groups. This has given rise to fears on the part of the dairy industry and others that they must reduce the loads carried on their trucks.

Actually, this is neither the legal effect nor the intended policy effect of the standard. The standard does not regulate the manner in which trucks are loaded or used on the road, and users are free to use their own judgment in loading their trucks, as they have been in the past. The standard is designed so that a properly-designed vehicle which satisfies its performance requirements under the conditions stipulated for compliance testing will perform safely under all reasonable conditions or real world use. Trucks equipped with the stronger and better-modulated brakes required by the standard, when loaded similarly to those in the past, should in fact be much safer both for their occupants and for the rest of the driving public than comparable vehicles were before. If the NHTSA should discover vehicles being produced that do not perform safely when loaded in a normal manner and can establish that this condition is attributable to deficiencies in vehicle manufacture or design, it can proceed against their manufacturers under its safety-related defect jurisdiction.

Representative Quillen requested consideration of a significant postponement of the standard, believing that a delay would increase truck sales. An examination of the truck market indicates that several months' inventory of trucks manufactured without the new systems remained unsold on March 1, 1975, suggesting that the economic downturn, rather than the new systems, accounts for many lost sales. The American Trucking Associations statistics on general freight tonnage indicate a steady decline in highway tonnage from the high figure reached in November 1973. It does appear that some of the slowdown is attributable to "pre-buying" of trucks to avoid Standard No. 121, but this effect would occur whatever the date of implementation. Accordingly the petitions of the Milk Industry Foundation and Representative Quillen are denied.

American Fire Apparatus Company has requested that the NHTSA reconsider its decision to implement the standard as scheduled, so far as it applies to fire fighting vehicles. NHTSA policy has been to grant fire fighting vehicles a minimum of two years from the issuance of any standard to achieve compliance because of the unique leadtime problems associated with the industry. (49 CFR § 571.8). On this basis, the NHTSA granted a delay of the effective date from September 1, 1974, to September 1, 1975, for these vehicles at the request of American Fire Apparatus (39 F.R. 17750, May 17, 1974). At the same time the general implementation date was extended six months. The NHTSA agrees that fire fighting apparatus is entitled to a full year's delay because of its long leadtime problems.

By this notice, the NHTSA denies all outstanding petitions for reconsideration of Standard No. 121's effective dates, with the exception of the date for fire fighting vehicles.

In consideration of the foregoing, Standard No. 121 (49 CFR § 571.121) is amended. . . .

Effective date: June 16, 1975. Because the previously established effective date for fire fighting apparatus was less than 180 days after the date of publication of this amendment in the *Federal Register*, it is found for good cause shown that an effective date less than 180 days from the date of publication is in the public interest.

(Sec. 103, 119, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51).

Issued on May 12, 1975.

James B. Gregory
Administrator

40 F.R. 21031
May 15, 1975

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems

(Docket No. 74–10; Notice 17)

This notice responds to six petitions for reconsideration of a recent amendment of Standard No. 121, *Air Brake Systems*, 49 CFR 571.121. That amendment deleted as of September 1, 1976, the emergency brake option that permits automatic application of parking brakes in place of a modulated emergency brake system on trucks and buses (40 FR 2989, January 17, 1975). In addition, that notice standardized the operation of the emergency brake control, specified a minimum number of emergency brake applications and releases, and provided for the integrity of the towing vehicle braking system in the event of failure of the air lines to the towed vehicle. On the basis of information and arguments presented by several petitioners, the National Highway Traffic Safety Administration (NHTSA) hereby withdraws the amendment that specified a minimum number of emergency brake applications and releases.

None of the petitions for reconsideration objected to the NHTSA's deletion of automatic parking brake application as a means of providing emergency braking capability. There were no objections to the specification that the emergency brake system control be the same control as that for the service brake system. These provisions remain unchanged, and will become effective September 1, 1976.

The standard tests the emergency braking capability of a vehicle by introducing a "single failure in the service brake system." Bendix Corporation requested that this requirement be replaced by a requirement for emergency braking capability "with either circuit's reservoir at zero psi." Presumably Bendix is suggesting that the "split system" design found on today's air-braked trucks be tested by draining either side of the system. Standard No. 121 does not specify a particular type of emergency brake system and cannot therefore specify failing any particular component. The NHTSA believes a vehicle should be capable of making stable in-line stops within the specified distance with a failure in any hose or reservoir in the service brake system. For instance, a failure in the air hose to the right front wheel should not make it impossible for a driver to keep the vehicle within a 12 foot wide lane. The agency does intend to clarify the status of various air lines in powered vehicles, particularly towing vehicles, to answer questions raised by International Harvester and the State of California concerning service brake system failure. These clarifications will appear in an upcoming notice on parking brake systems.

International Harvester, Ford, Midland-Ross, and Bendix objected to the requirement of S5.7.3 that requires the emergency brake system to be capable of not less than two applications and releases, as determined by brake chamber air pressure of 60 psi or more during the pressure phase of operation, and brake chamber air pressure of not more than 1 psi during the pressure release phase of operations. The manufacturers (and the American Trucking Associations) were concerned that the specification of 1- to 60-psi values was design-restrictive and would force substantial redesign of vehicles before the existing new designs can be thoroughly tested. Some of the petitions questioned whether the test would be conducted statically or dynamically.

The NHTSA is concerned that manufacturers not be updluly burdened with modifications to their systems during the initial introduction period of the standard. The agency has regularly indicated in its correspondence that it is monitor-

ing implementation of the standard to minimize disruption and costs while maintaining the standard's safety benefits. The maximum and minimum pressure values in question were specified simply as objective testing criteria and are not intended as design restrictions that fulfill a safety function.

In view of the redesign problems noted and their accompanying disruption, the NHTSA withdraws the application-and-release specification and will not reestablish it without further notice and opportunity to comment. (In answer to Bendix's question, it is noted that the 60 psi value in the pressure release phase was not intended to replace the "zero-torque" criterion for release of spring brakes.)

Midland-Ross, International Harvester, and Ford expressed several objections to the three requirements of S5.7.4 and the related test conditions of S6.1.14. The requirements are intended to assure that a combination vehicle remains capable of emergency braking performance in the event of hose failure between the towed and towing vehicles, including failure of both hoses due to trailer breakaway.

Comments incorrectly assumed that the requirements specify modulation of the trailer braking system in the event of hose failure under S5.7.4(b) and (c). In fact, section S5.7.4 does not require trailer braking requirements, but only specifies that a towing vehicle meet the enumerated requirements under certain conditions.

To eliminate confusion about the role of trailers in these tests, sections S5.7.4(a) and (b) are hereby revised to make it clearer that the vented line(s) to the trailer are only test conditions under which the towing vehicle must demonstrate emergency braking stopping distance capability. To eliminate a separate source of confusion in section S5.7.4(a), which is intended to simulate trailer breakaway, the section is also revised to eliminate an incorrect requirement for testing with a failed control line and an intact trailer supply line.

Midland-Ross and International Harvester objected to the test conditions of S6.1.14, which underlie S5.7.4(a) and (b). The S6.1.1.4 procedure is intended to simulate a trailer breakaway or, in the alternative, a failed control line on a loaded combination vehicle. International Harvester expressed the belief that five new tests were thereby added to the standard. It is now made clear that only one additional test of a single-unit vehicle capable of towing is required, and two additional tests of a truck tractor are required. These tests are conducted in the test sequence at steps 4(e) (loaded) and 6(e) (unloaded).

International Harvester questioned as unrealistic the criterion in S6.1.14 that specifies a 1-minute delay in braking following rupture of a brake line. The NHTSA recognizes that the towing vehicle protection system is expected to act in much less than 1-minute to protect the air pressure in the towing vehicle from the effects of a loss of air pressure in the towed vehicle. The 1-minute interval is intended only to permit adverse "testing-to-failure" of an inadequately designed system. As a practical matter, the NHTSA will test when air pressure is lowest during the 1-minute period.

Midland-Ross implied in its comments on S6.1.14 that the S5.7.4(a) test would be conducted with a trailer attached whose emergency brake system is activated during testing. As noted earlier, S5.7.4 applies only to a towing vehicle and only its brakes are tested. In S5.7.4(a), no trailer is attached to the towing vehicle (simulating a breakaway). In S5.7.4(b), a trailer is attached (simulating a failure), but only tractor brake activation is permissible.

Midland-Ross expressed the belief that S5.7.4 (c) requires modulation of the trailer brakes in the event of a failed air control or supply line. In fact, the section only requires that a towing vehicle be capable of modulating the air in the supply or control line following a single failure in the service brake system on the towing vehicle, but does not require modulation of the towed vehicle emergency brake system under any circumstances (including control line failure). The requirement ensures that a single failure in the truck itself will not prevent modulation of an unimpaired system from the towing vehicle protection system rearwards. A clarification has been added to limit the single failure to the service brake system of the towing vehicle, not including either of the air lines to the towed vehicle.

Because several modifications are being made to the requirements of S5.7 as previously published, the NHTSA is republishing the entire provisions of S5.7 as they will become effective September 1, 1976, although paragraphs S5.7, S5.7.1, S5.7.2, and S6.1.14 remain unchanged.

In consideration of the foregoing, S5.7 of Standard No. 121 (49 CFR § 571.121) is amended, effective September 1, 1976. . . .

Effective date: September 1, 1976.

(Sec. 103, 119, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at CFR 1.51.)

Issued on July 23, 1975.

James B. Gregory
Administrator

40 F.R. 31771
July 29, 1975

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems

(Docket No. 75–16; Notice 2)

This notice amends Standard No. 121, *Air Brake Systems*, 49 CFR 571.121, to establish new service brake system stopping distances until January 1, 1978, and increase brake actuation and release times on trucks, buses, and trailers. This notice also excludes from the standard trailers with an unloaded vehicle weight that is not less than 95 percent of the gross vehicle weight rating (GVWR), and any other vehicle with an unloaded vehicle weight that is not less than 95 percent of the GVWR and which has a maximum speed of 45 mph.

The NHTSA proposed reduction of Standard No. 121's stopping distance requirements (40 FR 24915, June 11, 1975), because data submitted by manufacturers of air-braked vehicles and air brake components indicated that variability of performance of certain braking and related components could in some vehicles necessitate more aggressive brake packages than are desirable to achieve the stopping distances contemplated in development of the standard. The agency also proposed increases in permissible brake actuation times to promote optimum cycling of the antilock systems used by most manufacturers in meeting the stopping distances. At the same time, the agency denied the petitions of the American Trucking Associations (ATA) and Consolidated Freightways (Consolidated) for extension of the required stopping distances as necessary to eliminate the necessity of high-torque brakes and antilock systems, and for suspension in whole or part of the standard's requirements. The denials were based on NHTSA's view that increased directional stability is critical to improvement of brake system performance on heavy vehicles, particularly articulated vehicles, that share the highway with passenger cars and other light vehicles.

Vehicle manufacturers and component suppliers supported without exception the increase in stopping distances. Additional discussions and data submitted by some manufacturers indicate that substantial effort is being made to identify and control all of the variables which affect compliance of air-braked vehicles with Standard No. 121. Most manufacturers recommended that the proposed extended distances be made permanent, but the NHTSA concludes that insufficient data exist at this time on which to base such a decision. Accordingly, the stopping distances are modified as proposed for a period that ends January 1, 1978. The NHTSA does not, therefore, accept the recommendations of Freightliner and Mack for longer distances, or the Freightliner recommendation for testing at 55 mph.

The proposed language has been modified to specify correctly the NHTSA's intent to extend service brake stopping distances on a skid number 75 surface for all vehicles under S5.3.1.2 and S5.3.1.3. Also, the additional sentence proposed for S5.3.1.3 was essentially redundant in view of the modifications to Table IIa, and that sentence has been deleted.

Manufacturers also supported the proposed increase in permissible brake actuation timing from 0.35 to 0.40 seconds for trucks and buses, from 0.25 to 0.35 seconds for trailer converter dollies, and from 0.25 to 0.30 seconds for trailers other than trailer converter dollies. The ATA recommended establishment of a minimum as well as maximum limit. While this suggestion may have merit, the NHTSA does not have sufficient time at this point to fully consider the suggestion, and will therefore treat it as a petition for rulemaking.

Bendix suggested that the increased actuation be permitted only for an interim period, but the NHTSA has evidence of degraded performance generated by the present timing which justifies a permanent change. Bendix is requested to submit any data for consideration that support its view that superior systems will exist by January 1, 1978, that provide both a faster and smoother response.

Freightliner Corporation repeated its view that actuation and release times are design-restrictive without corresponding safety benefit. While the NHTSA is willing to consider Freightliner's view for future action, it is noted that the ATA suggestion of minimum and maximum limits conflicts directly with Freightliner's point of view. In any case, elimination of these requirements was not contemplated by the scope of the proposal and will not be undertaken at this time.

Several manufacturers indicated that the petitions for longer actuation time implied the need for an increase in brake release times as well. White Motor Corporation supplied data substantiating the view that optimization of increased brake actuation times depends in part on design freedom to increase the release time in the necessary valving. Although increased release times were not proposed by the June notice, an increase in release times comparable to actuation times was contemplated by the intent of the modifications to permit somewhat slower valve action. To accomplish the intended revision, the NHTSA concludes that it is in the public interest to modify both the actuation and release time of S5.3.3 and S5.3.4 by an increase in permissible timing of 0.05 seconds. Fruehauf's suggested increase in trailer timing to 0.35 will be further considered, but the NHTSA does not believe it necessary to act on this level of increase without benefit of comments by interested persons.

The ATA, Consolidated, the Milk Industry Foundation, and Hackney Brothers submitted arguments that the stopping distance and brake timing modifications were insufficient to solve fundamental cost and reliability problems attributed by them to Standard No. 121. The ATA cited recall campaigns of antilock systems as evidence that the presence of high-torque front brakes on some trucks creates safety problems in the event of antilock malfunction. The ATA also asserted that "no lockup" performance on trailers contributes insignificantly to highway safety, and asked that antilock, if mandated, be required only on a vehicle's drive axles.

Consolidated relied on a manufacturer's statements of vehicle instability with the 121 brake systems as a ground for suspension of the standard. The company also cited cost estimates for the standard, and requested that they be substantially reduced by dropping the "no lockup" requirement entirely, or requiring it only on the vehicle's drive axles, and by extending stopping distances to eliminate the requirement for front axle 121-type brakes.

The NHTSA has undertaken an extensive evaluation of the standard's effect on truck braking characteristics. One element of that evaluation is testing by the NHTSA's Safety Research Laboratory of pre-121 and 121-equipped truck tractors. One series of tests (on a dry surface with a skid number somewhat higher than 75) included a stop from 60.8 mph in 231.2 feet by a 121-equipped International Harvester tractor (with front axle antilock disconnected and a full brake application) and a 121-equipped trailer in which the front wheel brakes never locked up. This experience indicates that 121-type front brake package need not be so aggressive as to create a safety hazard in the event of an antilock malfunction which escapes the notice of the driver.

The NHTSA's monitoring of the standard's implementation also supports NHTSA's position that the malfunctions experienced in initial antilock production and installation are an inevitable consequence of the introduction of a new system in high production. Those malfunctions that have been determined to be safety-related and that could result in unsafe highway operation have been recalled for remedy by the manufacturers concerned.

The NHTSA has evaluated Consolidated's revised cost objections to the standard. The information submitted does not modify the NHTSA's earlier conclusions. Accordingly, the NHTSA reaffirms its decisions not to revise or revoke the standard as requested by the ATA, Consolidated, the Milk Industry Foundation, or Hackney Brothers.

Consolidated characterized its comments as both a petition for reconsideration and, in the alternative, as a petition to modify the standard. A petition for reconsideration may under 49 CFR 553.35 be submitted in response to a "rule" issued by the agency, but the denial of a petition is not itself a "rule" within the meaning of that section. Therefore Consolidated's "petition for reconsideration" is invalid. Considered in the alternative as a petition for rulemaking to modify the standard, the NHTSA denies the petition for the reasons noted.

Other comments to the docket requested changes to the standard which the NHTSA will consider further but cannot dispose of at this time. The revisions in this notice must be issued prior to September 1, 1975, so that manufacturers are not required to meet the 245-foot stopping distance which becomes effective September 1, 1975. The issues, in addition to others noted earlier, that will be further considered are: (1) Freightliner's request for deletion of the dynamometer requirements for the front axle; (2) PACCAR's request for modification of dynamometer requirements on the drive axles; and (3) several manufacturers' requests for a decreased grade in the parking brake requirement. The NHTSA does not agree with Freightliner that the test surface and control trailer specifications are insufficiently objective, or that the wet surface and emergency brake stopping distances need to be increased. Testing by the NHTSA Safety Research Laboratory does not indicate a need to increase these distances. The agency will, of course, continue to evaluate any new data that indicate more objective specifications can be reasonably implemented, or that longer distances are advisable.

The third proposal for modification of the standard was revision of the standard's applicability to exclude trailers with a GVWR of 10,000 pounds or less, trailers with an unloaded vehicle weight that is not less than 95 percent of its GVWR, and any other vehicle that has a maximum speed of 45 mph, an unloaded vehicle weight that is not less than 95 percent of its GVWR, and no passenger-carrying capacity.

No comments opposed the exclusion of trailers whose unloaded vehicle weight is not less than 95 percent of the GVWR, and the standard is accordingly amended to exclude this vehicle group.

The State of California objected to exclusion of light trailers (GVWR of 10,000 pounds or less) on several grounds. Their comments point out that a light trailer built for low density loads can be dangerously overloaded. The State also cited that ease with which higher GVWR trailers could be derated in order to take advantage of the exclusion for lighter vehicles. California also noted the increased complexity of enforcement of the standard with added exclusions of this type. Altec Industries, which petitioned for the exclusion, argued that the exclusion should be broadened to 15,000 pounds GVWR. On balance, the NHTSA agrees with California that the exclusion might create more safety problems than safety benefit. In view of this conclusion, the agency has decided not to revise the standard's applicability in this respect.

The NHTSA also proposed exclusion of vehicles with the following characteristics: a speed attainable in 2 miles of not more than 45 mph, an unloaded vehicle weight that is not less than 95 percent of the vehicle GVWR, and no passenger-carrying capacity. Manufacturers of those vehicles generally supported the proposal but expressed confusion over each of the criteria. The largest question arose over the meaning of what constitutes the "unloaded vehicle weight." Crane Carrier, FMC Corporation, The Heavy Specialized Carriers Conference (HSCC), and Koehring pointed to the significant difference between the GVWR and the actual traveling weight of crane carrier models, considering special equipment which may or may not be included with the vehicle as optional or be permitted on the vehicle in transit.

The NHTSA has expressed the unloaded vehicle weight criterion in terms defined in § 571.3 of its regulations (49 CFR § 571.3) in a way which avoids these problems raised by the manufacturers. As defined, "unloaded vehicle weight" will normally be the GVWR of a vehicle minus its rated cargo load and its assigned occupant weight (at least 150 pounds). The rated cargo load would not include the weight of portions of a vehicle which are essential to its specialized

function whether or not they are removed in accordance with State regulation for transit purposes. To arrive at "unloaded vehicle weight," a manufacturer must only refer to the GVWR he has assigned to his vehicle, and subtract from it the rated cargo load he has assigned plus 150 pounds of each occupant position. These calculations are totally separate from the presence of particular optional equipment or necessary components which may or may not be removed for highway travel.

Manufacturers and the HSCC also asked whether occupant positions for crew members such as flagman or crane operator could be provided without constituting "passenger-carrying capacity." The NHTSA uses the word passenger in this context to mean a person who does not help to operate the vehicle or its equipment, *i.e.*, who is not part of an operating crew. Positions for the crew necessary to operate a vehicle's specialized equipment would not disqualify a vehicle under the passenger-carrying criterion.

Manufacturers recommended that the speed limitation of 45 mph be raised to 50 mph to allow unrestricted travel on all highway systems. The NHTSA remains convinced that this equipment with a high center of gravity and limited braking poses a safety problem when traveling at near highway speed in the flow of traffic. With the national speed limit at 55 mph, it is considered prudent to limit the speed of air-braked vehicles without 121 brake systems to a maximum attainable speed of 45 mph. For the benefit of the HSCC, it is noted that the definition of maximum attainable speed specifies a level surface for the basis of speed determination.

With regard to these vehicles, American-Coleman Company has requested that all vehicles equipped with a front steerable drive axle of 8,000 pounds GVWR or more be excluded from the requirements of Standard No. 121. The NHTSA has already fully considered this request, and in a series of notices (30 FR 40168, November 14, 1974; 40 FR 4153, January 28, 1975; 40 FR 8953, March 4, 1975), explained its reasons for not proposing such an exclusion. American-Coleman's petition is repetitious of its earlier petition and contains no new data for consideration. Accordingly, it is denied.

In consideration of the foregoing, Standard No. 121 (49 CFR 571.121) is amended. . . .

Effective date: August 27, 1975. Because these amendments do not impose additional requirements on any person and because they must replace provisions effective September 1, 1975, it is found for good cause shown to be in the public interest that they become effective sooner than 30 days following publication in the *Federal Register*.

(Sec. 103, 119, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

Issued on August 15, 1975.

Robert L. Carter
Acting Administrator

40 F.R. 38160
August 27, 1975

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems

(Docket No. 75–7; Notice 3)

This notice amends Standard No. 121, *Air Brake Systems*, 49 CFR 571.121, to permit bulk agricultural commodity trailers designed with a high ground clearance and other special features for use with farm tractors during harvests to meet emergency and parking brake requirements other than those specified in S5.6 and S5.8 of the standard.

This amendment follows reevaluation of a petition filed by Utility Trailer Manufacturing Company, in light of further data submitted by the company on August 6, 1975, and September 23, 1975 (these materials appear in NHTSA Docket No. 75–5). The NHTSA proposed to exclude certain specialized agricultural trailers from the emergency and parking brake requirements because "spring" brakes utilized for these systems were creating particular difficulty in harvest operations (40 FR 13316, March 26, 1975). Comments persuaded the agency not to proceed with the proposal at that time for two reasons (40 FR 28097, July 3, 1975). It appeared that control of air leakage and the installation of a manual parking brake control would permit disengagement in most cases, and that manual release and application would serve in the instances when all air had leaked away. The second reason to withdraw the proposal was that the excluded category was not defined well enough to limit the extent of the exclusion.

Utility has since supplied information indicating that air leakage cannot be controlled sufficiently to rely on it for the release of spring parking brakes under the specialized conditions of harvest operations. More significantly, Utility reports that inexperienced persons who mechanically release the spring brakes often fail to reengage them for highway operation, permitting the trailer to operate on the highway without a secondary means of braking.

With regard to the agency's concern that manufacturers supplying spring brakes to meet the standard would be placed at a competitive disadvantage by the exclusion, utility indicates that the manufacturers of the specialized trailers in question would approve of a parking and emergency braking system other than spring brakes. The competitive disadvantage would actually have occurred only with those highway trailers that were unintentionally included in the overly broad proposed definition.

With the newly submitted information in mind, the NHTSA has decided to issue the proposed exclusion, but in a more limited form than proposed. To limit the effect of this amendment to those trailers for which it is intended, the proposed definition is modified to describe more precisely trailers that are actually disconnected from highway truck-tractors and drawn through the fields as part of their function.

As discussed in the preamble to the proposal, the exclusion would have entirely excluded the trailers from the standard's emergency and parking brake requirements, relying on Bureau of Motor Carrier Safety Regulations to ensure the use of a "breakaway" system in their place. It is now apparent, however, that many of the vehicles in question would operate intrastate only, and that the breadth of the proposal must be somewhat restricted, to exclude only vehicles that are fitted with a breakaway system that complies with BMCS requirements.

In order to permit manufacturers of these specialized vehicles to commence manufacture for the 1976 harvest season, the NHTSA has decided to extend the duration of the limited exclusion

from the proposed date of January 1, 1976, to March 1, 1976. Utility requested that the date be extended to June 30, 1976, and the NHTSA will issue a further proposal if any further delay of this magnitude appears justified.

In consideration of the foregoing, S5.6 and S5.8 of Standard No. 121 (49 CFR 571.121) are amended. . . .

Effective date: December 5, 1975. Because this amendment does not place additional requirements on any person, and because manufacturers must be informed of future requirements for their products, it is found for good cause shown that an immediate effective date is in the public interest.

(Sec. 103, 119, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

Issued on November 28, 1975.

James B. Gregory
Administrator

40 F.R. 56898
December 5, 1975

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems

(Docket No. 75–16; Notice 6)

This notice amends Standard No. 121, *Air Brake Systems*, to suspend until January 1, 1977, the service brake stopping distance requirements as they apply to buses.

The NHTSA proposed a 1-year suspension of service brake stopping distances (40 FR 52856, November 13, 1975) following a public meeting on Standard No. 121 (49 CFR 571.121). Bus performance was reviewed by manufacturers and users, and by Rockwell International Corporation, presently the manufacturer of most of the axles and antilock components installed in transit and intercity buses. Other data collected by the NHTSA substantiate a pattern of erratic behavior in bus antilock equipment used in most transit and intercity operation that warrants disconnection while a correction is fully developed. The proposed suspension was based on manufacturer and user requests for a period in which modified hardware could be field-evaluated along with other antilock systems being offered for bus applications.

The comments uniformly supported the proposed suspension of service brake stopping distance requirements (including the "no lockup" requirement) for transit and intercity buses. However, component suppliers, bus manufacturers, and bus users differed over the extent of the proposal in three areas.

Rockwell and General Motors expressed concern that the preamble to the proposal had not made clear whether the proposal was intended to meet problems other than erratic antilock performance. Transport of New Jersey also objected that the proposal might be narrowly construed to mean that only the "no lockup" aspect of the stopping distance requirements would be suspended. AM General questioned whether the revision included "any attempt to impose stopping distance and lane limit test requirements."

The NHTSA proposed suspension of the service brake stopping distance requirements (S5.3.1) in their entirety, not just the "no lockup" requirements of the section. Suspension of the entire requirement was intended to moderate the maintenance and misadjustment problems that are associated with the faster wearing brake linings provided in compliance with the standard.

General Motors noted that, because of the unique configuration of the braking system on its new transit bus, the limited nature of the NHTSA's proposed suspension, specifically the continuation of the partial system failure requirements, inadvertently prevents their bus from utilizing the lower-coefficient linings intended by the proposal. This issue is presently under consideration by the agency, and may be the subject of another proposal to be issued shortly.

The second area of concern to some manufacturers was whether the NHTSA intended to cover school buses with the proposed exclusion. General Motors and Wagner Electric Corporation expressed the view that school buses should not be included. International Harvester, Crown Coach, and several school districts believed that the vehicles should be included in the suspension. The NHTSA intended to include school buses in its proposal and, based on review of the comments, has concluded that these buses should be included in the suspension.

International Harvester pointed out that the stop-and-go cycle of school buses can cause distinctive stresses on the air brake system that are similar to that encountered in transit bus operation. While not made explicit, Crown Coach's comments illustrate that some school

buses utilize the same axles and antilock component as transit and intercity buses. Limiting the suspension to a portion of the air-braked school buses would create an unintended economic disadvantage for some school buses of this type.

Wagner and General Motors argued that some school buses utilize truck chassis and brake systems, and that these systems do not suffer from the same problems as the bus components criticized at the public meeting. It is true that the components utilized generally in trucks and also used in some buses have been determined to be reliable (40 FR 59222, December 22, 1975). The usage cycles of various vehicles are, however, evidently an important factor in some of the problems that have been experienced. Considering the similarity in the usage of school buses to that of transit buses, this agency has decided that the most desirable course of action is to include school buses in the suspension of stopping distance requirements.

The third area in which commenters questioned the extent of the proposal was the length of the suspension. Bus operators and their associations (*e.g.*, National Association of Motor Bus Owners (NAMBO), American Public Transit Association (APTA), Chicago Transit Authority) and bus manufacturers (General Motors, AM General, and Eagle International) generally argued that a 1-year evaluation period following development of adequate corrections to existing or new hardware would be necessary. Motor Coach Industries and Transportation Manufacturing Corporation (manufacturers of the majority of intercity buses) supported the 1-year proposal without commenting on the adequacy of the proposed 1-year suspension period. Rockwell, as the present manufacturer of most of the transit and intercity bus axles and antilock systems, cautioned the NHTSA that a specific date for the effectiveness of S5.3.1 would reduce the thoroughness of the evaluation program. The company did support the 1-year suspension.

The proposal was for a 1-year suspension only. This agency has not found this to be an emergency situation that would justify promulgating a delay greater than that proposed without the benefit of notice and opportunity to comment. Therefore, the NHTSA hereby makes final its proposed 1-year suspension of the stopping distance requirements, and will further evaluate the requests for a longer period of suspension. Bus manufacturers have stated that they intend to initiate field evaluation of improved antilock systems, and this agency will actively monitor these efforts as the basis for future action. The support of field testing by NAMBO and APTA will also be important in making meaningful evaluations of anticipated system modifications.

Chrysler, Freightliner, and International Harvester recommendations on other aspects of the standard and its applicability to other vehicle types have been responded to in the NHTSA's recent proposal for modification of the standard's performance levels for trucks, buses and trailers (40 FR 59222, December 22, 1975).

AM General asked whether buses manufactured during the suspension could be required to be retrofitted in the future. The answer is no. The motor vehicle safety standards in effect at any date apply according to their terms only to vehicles manufactured on that date. In answer to AM General's question whether the antilock system on 121-equipped buses may "be completely deactivated and dismantled and the vehicle returned to the pre-FMVSS #121 status," it is the position of the NHTSA that manufacturers and operators are the persons qualified and required to determine the safest configuration for operation of their vehicles, subject to applicable Bureau of Motor Carrier Safety regulations. With regard to the effect of Federal law on the modification of safety systems, a manufacturer of air-braked buses that conform to the air brake standard may instruct the owners of its products to disconnect the antilock system used to meet the standard, for the period necessary to correct a safety-related defect in the system that may make its operation hazardous.

It is also noted that this amendment constitutes the NHTSA's favorable response to APTA's October 6, 1975, request for modification of the standard, and the October 22, 1975, petition of the Eastern Bus Maintenance Men's Conference concerning Standard No. 121.

In consideration of the foregoing, S5.3.1 of Standard No. 121 (49 CFR 571.121) is amended by the addition of the phrase "Except for a bus manufactured before January 1, 1977, and" at the beginning of the first sentence.

Effective date: January 6, 1976. Because this amendment represents a relaxation of the requirements of the standard and does not place additional requirements on any person, it is found for good cause shown that an immediate effective date is in the public interest.

(Sec. 103, 119, Pub. L. 89–563, 80 Stat. 718 (14 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.50.)

Issued on January 6, 1976.

James B. Gregory
Administrator

41 F.R. 1598
January 9, 1976

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

(Docket No. 75–5; Notice 5)

Air Brake Systems

This notice amends Standard No. 121, *Air Brake Systems*, by extending until June 30, 1976, the period in which bulk agricultural commodity trailers designed with a high ground clearance and other special features for use with farm tractors during harvest can meet emergency and parking brake requirements other than those specified in S5.6 and S5.8 of the standard.

Standard No. 121, 49 CFR 571.121, presently permits this specialized agricultural trailer category the option, until March 1, 1976, of meeting the parking brake requirements of the standard (actuation by an energy source unaffected by air loss in the service brake system) or the air-actuated "breakaway" system that complies with Bureau of Motor Carrier Safety requirements (49 CFR § 393.43). The NHTSA proposed extension of the March date to June 30, 1976 (41 FR 1763, January 12, 1976) to permit completion of the bulk agricultural commodity trailers necessary for the 1976 harvest season, in response to a petition of the Utility Trailer Manufacturing Company. In a separate action, the NHTSA has also proposed that the present parking brake requirements for all vehicles subject to the standard be broadened in a closely similar fashion to permit the use of an air energy source, with single diaphragm brake chambers as well as dual diaphragm brake chambers for actuation of the parking brake (40 FR 56920, December 5, 1975). It is clear, however, that separate and swifter action than the general proposal is necessary to permit the manufacture of trailers for the 1976 harvest.

Utility Trailer Manufacturing Company supported the extension of the period to June 30, 1976, and advocated extension of the option to all other air-braked vehicles. Wesco Truck and Trailer Sales (Wesco) also supported the proposal and suggested that a 2-year suspension of the standard would permit perfection of the new brake systems. Wesco recommended that the parking brake system be made optional on this type of agricultural trailer. Fruehauf Corporation supported the proposal without qualification.

In view of the comments received and the NHTSA's continued view that the special considerations for in-field use should be given to agricultural trailers with regard to parking brake requirements, the agency has decided to amend the standard as proposed. The other recommendations by Utility and Wesco are noted, but they do not fall within the limits of action proposed by the NHTSA.

In consideration of the foregoing, the last sentences of paragraphs S5.6 and S5.8 of Standard No. 121 (49 CFR 571.121) are amended by changing the date "March 1, 1976" to "June 30, 1976."

Effective date: February 26, 1976. Because this amendment creates no additional requirements for any person, and because trailer manufacturers need to know the extent of the option period as the basis for planning manufacturing schedules, an immediate effective date is found to be in the public interest.

(Sec. 103, 119, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.50.)

Issued on February 20, 1976.

James B. Gregory
Administrator

41 F.R. 8347
February 26, 1976

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems

(Docket No. 75–16; Notice 7)

This notice amends Standard No. 121, *Air Brake Systems*, to establish brake performance levels that are less stringent than existing levels. The amendments also affect towing vehicle performance and the effective date of the standard for certain categories of specialized vehicles.

The National Highway Traffic Safety Administration (NHTSA) proposed these modifications (40 FR 59222, December 22, 1975) in response to information developed at an October 1975 public meeting and other information collected by the NHTSA on field experience with implementation of Standard No. 121 (49 CFR 571.121). The proposal also responded to requests from Freightliner Corporation, PACCAR Corporation, White Motor Corporation, and the American Trucking Association (ATA).

CONSIDERATIONS UNDERLYING THE STANDARD

Under the National Traffic and Motor Vehicle Safety Act, as amended (the Act) (15 U.S.C. § 1381 *et seq.*), the Department of Transportation is responsible for the issuance of motor vehicle safety standards that, among other things, protect the public against unreasonable risk of accidents occurring as a result of the design, construction, or performance of motor vehicles. The Act directs the agency to consider whether a standard would contribute to carrying out the purposes of the Act and would be reasonable, practicable, and appropriate for a particular type of motor vehicle. 15 U.S.C. 1392(f)(3). The standard must, as formulated, be practicable, meet the need for motor vehicle safety, and be stated in objective terms. 15 U.S.C. 1392(a). The Senate Committee drafting the Statute stated that safety would be the overriding consideration in the issuance of standards. S. Rep. No. 1301, 89th Cong., 2d Sess. (1966) at 6.

Vehicles equipped with air brakes figure prominently in the highway safety hazards addressed by the Act. The National Safety Council (NSC) reports that more than 700,000 air-braked vehicle accidents, causing over 5,000 deaths, occur each year. *Accident Facts* 56 (1975). Accident figures show that heavy truck-trailer combinations are extremely hazardous to other highway users, and have a disproportionate involvement in fatal accidents. *Accident Facts* 56 (1975). Not only is their exposure greater because of the higher average mileage traveled, but they actually have a much higher rate of fatal accidents *per vehicle mile*, as shown by the preliminary report in a recent study by the Highway Safety Research Institute. "Highway Safety Effects of Energy Crisis on U.S. Toll Roads" (NHTSA contract in process at Highway Safety Research Institute). The NSC reports that the rate of involvement per vehicle in fatal accidents by truck-trailer combinations is nine times greater than the involvement by passenger cars. The fatality rate of heavy truck-to-car accidents is fourteen times greater than that of car-to-car accidents. "Truck Accidents in North Carolina," *Highway Safety Highlights*, Highway Safety Research Center, U. of N. Carolina (May 1975). Approximately 35 occupants of passenger cars are killed for every occupant of a heavy truck who loses his life in truck collisions with passenger cars on the interstate system. *Truck Accidents and Highway Safety—An Overview* 6 (1968); National Transportation Safety Board, *Special Study, Commercial Motor Vehicle Braking* 2 (Nov. 1972). Indeed, there are some indications that the involvement rate in accidents by

truck-trailer combinations is increasing. "Highway Safety Effects of Energy Crisis on U.S. Toll Roads" (in process).

Faced with data showing the disproportionate hazards of heavy trucks on the highway, the National Highway Safety Bureau (predecessor agency to the NHTSA) initiated a program to improve the safety performance of these vehicles. There was no initial Federal motor vehicle safety standard applicable to air-braked trucks. At the inception of the regulatory development program, the agency solicited comments on several aspects of commercial vehicle safety (32 FR 14278, October 14, 1967) including brake systems, tires, and rear-underride protection. The engineering staff consulted with representatives of the heavy motor vehicle industry, reviewed existing data and literature, and issued several contracts to investigate the nature of the large vehicle safety problem. An advance notice of proposed rulemaking on coupled vehicle stability and control was issued in 1969 (34 FR 1055, January 23, 1969) to solicit the views of the industry and other interested parties on the means to reduce the number and severity of heavy vehicle accidents.

The determination of motor vehicle accident causation has been hampered by two basic difficulties. First is the absence of a representative broad-based body of highway accident data of sufficient detail to permit accurate discrimination of accident causation effects. Second is the undeveloped state of causation analysis methodology. Even if complete accident data were available, existing methodology provides no objective basis for quantitatively assessing the degree to which any prospective countermeasure would reduce the number or severity of crashes. The agency, therefore, had to rely on qualitative analysis, by its own and other researchers, of the limited available accident data on heavy vehicles.

Available evidence indicates that, relative to the lighter passenger cars sharing the highway, inferior braking and poor vehicle control of trucks during braking and turning maneuvers are substantial causes of heavy vehicle involvement in accidents. At the time the NHTSA first studied the problem, existing braking characteristics and performance of passenger cars and heavy trucks varied dramatically. Trucks generally are much heavier than passenger cars, have a higher center-of-gravity, and the axle-by-axle loads on trucks vary sharply between the loaded and unloaded conditions. *Bus, Truck, Tractor-Trailer Braking System Performance* 1, Highway Safety Research Institute, U. of Michigan (1971). Passenger cars' braking distances from 60 mph on a dry surface reported to NHTSA in 1975 by vehicle manufacturers range from 165 to 225 feet. *Brakes, a Comparison of Braking Performance for 1975 Passenger Cars and Motorcycles.* Truck-trailer combinations have average capabilities of approximately 300- to 350-foot stops under similar conditions, although some of the poorer-performing combinations take as much as 450 feet to stop from 60 mph. *Bus, Truck, Tractor-Trailer Braking System Performance.* Even the worst of these truck brake systems presumably met the only Federal braking requirements in effect at the time, those of the Bureau of Motor Carrier Safety (BMCS), which imposed requirements for stops from 20 mph. 49 CFR § 393.52.

Federal Highway Administration statistics demonstrate that, in rear-end collisions on the interstate system, vehicle types with the longest average stopping distances are also the vehicles with the highest rate of involvement in fatal accidents. *Public Roads 1969* Figure 9, and *Public Roads 1966* Figure 8. One study shows that, of 453 accidents involving one or more vehicles, more than three-fourths involved skidding, and loss of control occurred following application of the brakes in more than half of them. *The Importance of Loss of Directional Control in Car Accidents*, G. Grime (June 1963). NHTSA evaluation of BMCS statistics on selected major accidents of regulated carriers indicates that accidents involving "jackknifing" or other skidding, and collisions into the rear-end of vehicles, or into slowly moving or stopped vehicles, could often be reduced in severity or avoided altogether by improved vehicle stability and braking. This conclusion is supported by the National Transportation Safety Board, an independent agency that investigates major transportation accidents. *Special Study—Commercial Vehicle Braking 2* (November 1972). Independent researchers in State highway fatality statistics also conclude that improved braking

and handling for truck-trailer combinations would improve overall highway safety. Lohman and Waller, "Trucks: An Analysis of Accident Characteristics by Vehicle Weight," U. of N. Carolina (September 1975); Baker, Wong, and Masemore, "Fatal Tractor Trailer Crashes: Considerations in Setting Relevant Standards" (July 1965).

Numerous research studies have investigated the questions of improved stability of heavy motor vehicles, particularly truck-trailer combinations, *e.g.*, "The Handling and Stability of Articulated Vehicles under Braking Conditions," F. D. Hales, et al. (January 1966). It is a universally accepted principle of vehicle dynamics that a prerequisite to the maintenance of stability and directional control of any automotive vehicle is that its tires continue rolling. A tire on a locked wheel can generate no lateral forces to affect its direction of motion. A vehicle whose wheels are locked is likely to slide sidewards as a result of such conditions as unevenness or banking in the road surface, wind forces, impacts on or by another vehicle or steering inputs by the driver as a result either of the emergency situation or of curves, *e.g.*, R.D. Lister, "Retention of Directional Control When Braking," SAE Paper 963A (January 1965); "Measurement of Vehicle Response in Severe Braking and Steering Maneuvers," Dugoff, et al., SAE Paper 710080 (January 1971).

Consultation with the truck manufacturing and user industry, and a major research contract on heavy vehicles for the agency, demonstrated that improved systems were available to increase heavy vehicle stopping control. *Truck, Bus, Tractor-Trailer Braking System Performance*, U. of Michigan (1971). Improved fade resistance, improved actuation and release times, greater air reservoir capacity, and partial failure performance are elements of such improved braking. Most important were more effective brakes to reduce the disparity in stopping capabilities between passenger cars and heavy vehicles, and provision against wheel lockup during braking in order to prevent the vehicle from skidding out of control. The ATA, in its comments on the 1967 notice concerning truck braking, recommended that consideration be given to "anti-locking brake devices." See NHTSA public docket. Comments received in response to the agency's 1969 notice on coupled vehicle stability and control confirmed that better brake performance was possible and that various devices to reduce chances of wheel lockup were available. Meetings with an "outside task force" of interested industry representatives and with individual manufacturers also showed the technical feasibility of improved braking systems.

In view of the available technology to improve heavy vehicle braking and vehicle control, and the over-involvement of air-braked vehicles in highway crashes that could be avoided or reduced in severity by better braking and vehicle control systems, the NHSB in 1970 proposed braking performance standards for air-braked trucks, buses, and trailers. The agency action was also motivated by the attempts to increase permissible size and weight of commercial vehicles on the interstate highway system (a weight increase to 80,000 pounds gross vehicle weight rating has occurred since proposal and implementation of the standard). Standard No. 121 was issued in February 1971, and was implemented for trailers on January 1, 1975, and for trucks and buses on March 1, 1975.

Although the standard involves numerous aspects of air brake systems, the most important and controversial provisions of the standard are those that require improved stopping capability and "no lockup" performance. Section S5.3.1 specifies stopping in limited distances from 20 and 60 mph, in the loaded and unloaded conditions on wet and dry surfaces, with the vehicle remaining in a 12-foot-wide lane and with limits on wheel lockup. It is the stopping limits and "no lockup" requirements that are the source of the basic issues concerning the standard.

The agency established a stopping distance requirement of 245 feet from 60 mph on a dry surface with the vehicle loadeed. The stopping distance of passenger cars under comparable conditions averaged approximately 200 feet, with many vehicles bettering that mark. By mandating 245 feet as a minimum requirement, the standard improved the safety of air-braked vehicles in two ways. The minimum distance requirement placed a floor on stopping distance performance and eliminated the vehicles that

were built with extremely long stopping distances. More importantly, it mandated a substantial reduction in the disparity of braking performance between passenger cars and heavy vehicles as a whole.

While all elements of the industry supported the principle of minimum stopping distance requirements for air-braked vehicles, questions arose following issuance of the standard and before implementation as to the technological feasibility for mass-produced vehicles of the level set in the standard. The Act requires that safety standards be "practicable."

The basic NHTSA contract and other test data underlying the standard demonstrated that some pre-121 production vehicles already approximated the stopping distance requirement of 245 feet. But manufacturers that had stated they could provide the minimum stopping distance of 245 feet discovered that the traditionally weak front axle brakes on many trucks would have to be substantially upgraded, in some cases more than had originally been anticipated. Although the NHTSA implemented the standard with a 258-foot interim stopping distance to accommodate mass production start-up problems, front axle brakes on some vehicles were still overdesigned, and for two basic reasons. The source of the problem was not technological unfeasibility of producing the desired handling characteristics, which are available in many 121-equipped vehicles produced since March 1, 1975. Rather, it appears that some manufacturers sought to ensure 100-percent compliance with the standard by concentrating on utilizing a few new axle and brake assemblies that were sufficiently aggressive to manage the braking force for an entire line of vehicles. In addition, the unanticipated degree of variability in performance of some mass-produced components forced larger "compliance margins" of over-performance, to assure that each vehicle produced would meet the minimum performance level of the standard.

The NHTSA responded to the evidence of adverse handling in some manufacturers' production by increasing stopping distances to 277 feet until January 1, 1978 (40 FR 38160, August 27, 1975). This action was supported by manufacturers but failed to encourage sufficiently the "depowering" of front axle brakes. The agency therefore proposed new established values (not limited to an interim period) in a proposal discussed in detail below.

Thus, while the stopping distances established by the standard have always been fully justified in safety need and technological feasibility, the agency has responded several times to evidence that some manufacturers were having difficulty in improving their worst-performing vehicles enough to satisfy the standard. The availability of mass-produced vehicles from some manufacturers that meet the 245-foot requirement without adverse handling (see Docket 75–16; Notice 02–125) demonstrates that the present proposed distance is undoubtedly achievable in advancing motor vehicle safety.

The other major provision that has raised issues in implementation of the standard is the requirement limiting lockup of wheels during the stops mandated by the standard. As explained earlier, the limitation on lockup is intended to increase the stability and directional control of heavy vehicles during braking and turning maneuvers. Most manufacturers utilize antilock systems to provide the required "no lockup" performance, although other devices (such as load-sensitive proportioning devices) may be capable of providing the specified performance. The systems are installed to momentarily and automatically release the brakes to avoid skidding in cases where the brake application is so strong, or the road surface so slippery, that wheel lockup would normally occur. Some manufacturers and users have reported that some of the antilock systems that have been installed do not function correctly and that malfunction makes 121-equipped vehicles less safe than pre-121 vehicles. These commenters argue that for this reason the standard does not meet the need for motor vehicle safety as specified in the Act.

Standard No. 121 meets the need for motor vehicle safety by specifying "no lockup" performance that increases directional stability and control of heavy motor vehicles to reduce their involvement in highway accidents. The decision by some manufacturers to choose a type of antilock that malfunctions or is not suited to their products does not mean that the standard fails to meet the need for motor vehicle safety. That conclusion could be drawn only if the safety

performance specified were not in fact practicable. The fact that thousands of vehicles have been manufactured with antilock systems that have not reported any safety-related defects clearly shows that the standard is practicable. The position that a manufacturer's failure to build a reliable product could of itself defeat the validity of a standard would place in the hands of the regulated industry the decision to implement, continue in effect, or cancel any safety standard.

The NHTSA has monitored the test programs of antilock manufacturers to ensure that reliable systems were introduced. Proprietary data on antilock test programs are included in the administrative record of this standard.

The NHTSA has taken appropriate action in the case of antilock malfunction that poses a potential safety hazard. In cases where the malfunction has momentarily released the brakes under some circumstances when they should remain applied, the agency has suspended the standard's requirements for a period to permit development of solutions to the design deficiencies involved (41 FR 1598, January 9, 1976). Most antilock malfunctions simply cause the system to disable itself and return braking to normal. Users have expressed the fear that, with disabled antilock, severe brake applications will cause wheel lockup and cause the vehicle to lose control and become a hazard on the highway. The NHTSA considers these fears unrealistic, because of the extremely limited cases in which the problem would arise.

The circumstance where a 121-equipped vehicle is significantly more likely to lock up than a pre-121 vehicle is on the front axle because of the generally stronger brakes. But the possibility of this occurring is prevented at low pedal applications by the provision of "automatic pressure limiting valves" that reduce or eliminate the brake pressure to the front axle during the great majority of brake applications. Also, a warning signal on the instrument panel advises of antilock electrical failure and gives advance notice to the driver in all cases except the statistically rare occasions when antilock fails during a panic brake application. In view of the benefit of functioning antilock and the extremely small chance that a driver would not be warned before use of the brakes in a panic stop, the NHTSA evaluates the risk of malfunction as small and outweighed by the benefits of the antilock requirement.

Many commenters at the October 1975 public meeting suggested that hundreds of reliability problems with safety consequences have occurred in antilock components used to meet the standard. The Act requires vehicle and equipment manufacturers to report such safety-related defects that develop in their products, to the NHTSA and the agency has carefully monitored reports concerning antilock reliability. To date, only nine such safety-related defects have been reported, and the majority of them were limited to minor start-up problems in the mass-production process that were easily corrected.

NOTICE 05 PROPOSAL

Vehicles produced to meet the standard are now in service and available for comprehensive evaluation. Reports on vehicle performance were received at a public meeting on implementation of the standard in October 1975. Other reports have been made directly to the agency. The NHTSA has been testing 121-equipped vehicles at its Safety Research Laboratory since production vehicles have become available. In September 1975, the agency discussed implementation of the standard with all antilock manufacturers and several major vehicle manufacturers.

The NHTSA has determined that some vehicles produced to comply with the standard demonstrate unsatisfactory handling characteristics. The source of the problem is not technological unfeasibility of producing vehicles with desirable handling characteristics, as demonstrated by many of the 121-equipped vehicles produced since March 1, 1975. Rather (as noted earlier), it appears that some manufacturers sought to ensure 100-percent compliance with the standard by concentrating on utilizing a few new axle and brake assemblies that were sufficiently aggressive to manage the braking force for an entire line of vehicles. In addition, the unanticipated degree of variability in performance of some mass-produced components forced larger "compliance margins," to assure that each vehicle produced would meet the minimum performance level of the standard. The brake imbalance that

exists in any braking system (due to production variations) is of course magnified as the brakes become more effective.

While it would be possible to require redesign of the vehicles to eliminate these characteristics, the agency considers this course of action unduly costly in view of the economic situation of the heavy truck industry. Large sums have already been expended by vehicle manufacturers to achieve compliance with the standard. The agency has decided that it should instead reduce the performance levels of the standard somewhat to permit the "depowering" of the steering axle brakes sufficiently to improve handling characteristics while design problems are being resolved by the manufacturers.

The agency has evaluated the comments submitted by vehicle manufacturers and users, equipment suppliers, the International Brotherhood of Teamsters, and the Commonwealth of Pennsylvania. The NHTSA concludes that the proposal should be made final as proposed, with only a few modifications. While commenters expressed differing views on what other modifications of the standard might be beneficial to motor vehicle safety, they supported, with few exceptions, the proposed performance levels as a feasible technical level that would contribute to motor vehicle safety. A commonly expressed view was the need for stability in the performance levels of the standard as the basis to get the truck industry back into a healthy sales posture. Ford, for example, stated that it "trusts that the Administration will recognize the need to proceed cautiously to avoid further disruptions of the heavy truck business."

Because the comments generally agreed that the 293-foot stopping distance would accomplish the NHTSA's goal to permit depowering front axle brakes enough to eliminate handling problems, the stopping distance requirement is amended as proposed. Freightliner Corporation, which petitioned for these stopping distances, noted, "The proposed loaded vehicle stopping distances provide a realistic basis for establishing minimum service brake stopping distance requirements."

Oshkosh Truck Corporation disagreed with the proposed distances in the case of straight trucks, with the view that the problems raised at the October 1975 public meeting apply only to buses and tractor-trailer combinations. Oshkosh pointed to the adequacy of its brake systems and noted that the earlier increase in permissible stopping distances from 245 feet to 277 feet should provide for any "compliance margin" for problems being experienced.

The NHTSA does not question the superior handling characteristics of Oshkosh vehicles, but acts from a concern over axle systems designed for the entire vehicle population, including many vehicles that are different from Oshkosh products. It is an unfortunate effect of reducing the requirements for all vehicles that manufacturers of the better-designed vehicles, such as Oshkosh, may feel forced by commercial considerations to downgrade the braking abilities of their products.

The Commonwealth of Pennsylvania, citing examples from its accident files of light vehicles being struck from the rear by heavy trucks, expressed strong concern over the proposal for an increased stopping distance. The NHTSA shares this concern. The countervailing considerations cited above lead to a reduction in the basic braking performance that has up to now been required by Standard 121. However, this agency has determined that the 293-foot minimum requirement, along with the many other requirements of the standard, will nevertheless substantially increase the braking capability of air-braked vehicles compared to that prevailing before the standard went into effect. The standards also continue to prevent the manufacture of those 3-axle trucks that have grossly inferior braking capability.

The International Brotherhood of Teamsters expressed continued support for the standard, urging more stringent performance levels in the future. As the proposal noted, far more information will be available in the future as the basis for further changes of the stopping distance performance levels, including the statistical evaluation of pre-121 and 121-equipped vehicles in the field. The NHTSA believes that further notice and the opportunity for comment should precede any future changes of the stopping distance requirements.

Vehicle manufacturers conducted as much testing as possible, during the winter months, of the

proposed new loaded-vehicle stopping distances. Most concluded that the unloaded stopping distance (258 feet versus 293 feet) would interfere with their efforts to "depower" braking sufficiently to reduce the possibility of adverse handling. The data on which the NHTSA based its proposal did not indicate that unloaded stopping distances would require relaxation in order to accomplish the desired depowering. Typically, unloaded performance is substantially superior to loaded performance and justifies shorter stopping distance requirements.

The ATA pointed out that as one braking characteristic is changed its effect on other characteristics is unpredictable. In this case, it appears that the recent testing demonstrates a sensitivity of unloaded to loaded stopping distance that has not been fully appreciated until now. To implement the NHTSA intention to permit sufficient "depowering" for improved vehicle performance, the agency concludes that the required unloaded stopping distance should be made equal to the loaded vehicle distances, as recommended by Ford, PACCAR, Freightliner Corporation, and Midland-Ross. Other manufacturers also stated that the shorter unloaded stopping distances could constitute a problem. The NHTSA considers it necessary, in light of this information, to increase the unloaded as well as loaded vehicle stopping distances. Table II is amended accordingly.

In view of this modification, the proposed exclusion of certain specialized vehicles from the unloaded stop (proposed S5.3.1.3) is unnecessary and therefore not adopted.

Wagner and some other commenters made the incorrect assumption that the NHTSA was concerned only with loaded-vehicle stopping performance of 121-equipped vehicles. While the agency's proposed action only addressed loaded distances, the express purpose was to permit "depowering" for improved handling under all conditions. Wagner's view that the NHTSA intended the use of antilock for unloaded vehicle stops is incorrect. Actually, the NHTSA anticipates that the depowering will have the effect of eliminating the need for antilock (or other mechanical means for preventing uncontrolled wheel lockup) under all conditions in the case of many vehicles.

Besides the many recommendations to specify comparable unloaded stopping distance requirements, commenters made varying suggestions for further change in stopping performance requirements. Consolidated Freightways called for deletion of the "antilock requirement" or, in the alternative, for cancellation of the standard. Its truck-manufacturing subsidiary (Freightliner Corporation) also called for prohibition of front axle brakes on three-axle truck-tractors. The ATA called for stopping distances that would guarantee deletion of front axle antilock. Mack Trucks, Inc., asked for deletion of the requirement for "no lockup" performance on the front axle. White Truck Corporation asked for longer distances in some cases. International Harvester asked for a 330-foot stopping distance, or a more fundamental revision of the standard proposed by the company in December 1974. Ford requested that one wheel be permitted uncontrolled lockup during stopping tests, and suggested further rulemaking to "remove the need for antilock on all front axles." Bendix Corporation suggested suspension of the service brake stopping distances and "no lockup" requirements for trucks.

The NHTSA judges that these requests are not directed at the "depowering" of overly effective brakes intended by the NHTSA proposal. For the most part, the recommendations appear to promote deletion of front axle antilock from certain trucks that may not allow a controlled "no lockup" stop without the system. Consolidated Freightways, Bendix, and Roadway Express argued for deletion of antilock from the entire vehicle. At least in the case of these three requests, the concern is apparently based on the continued argument as to the reliability of antilock. In the proposal underlying this rulemaking, the NHTSA explained the basis for its determination that antilock is reliable, and since that time the agency has not developed or had reported information which modifies that view. An additional safety-related defect report, involving potential radio frequency interference with antilock function in one vehicle manufacturer's products, has been reported, but no report of any accidents resulting from the defect has been made. The NHTSA maintains its conviction that antilock is sufficiently reliable to justify

its continued installation in satisfaction of the standard's requirements for directional stability. Accordingly, the agency does not act on the recommendations for deletion of the "no lockup" requirements or for distances calculated to eliminate the significance of the "no lockup" requirements. Consolidated's legal arguments on NHTSA rulemaking are being considered in the separate judicial review of Standard No. 121 and are not discussed in this notice for that reason.

Freightliner suggested relaxation of emergency braking distances, and PACCAR recommended that the 35-foot stop from 20 mph be made a 40-foot stop. The NHTSA did not propose these changes and does not believe them to be necessary for the "depowering" intended by the proposal. The 40-foot level would be no improvement over regulations existing prior to Standard No. 121. Furthermore, the agency gathers from the comments submitted that most elements of the industry desire certainty in the standards to return stability to the truck manufacturing process. In the interests of this certainty, the agency does not intend to further consider the Freightliner and PACCAR requests.

Along with the stopping distance modifications, the NHTSA proposed conforming changes in the dynamometer requirements. Brake fade and recovery levels would be reduced somewhat by the proposal, the "hot stop" requirement would be deleted, and recovery requirements for the front axle of truck-tractors would be deleted. These proposals were intended to permit "depowering" of brakes to the 293-foot stopping-distance level.

Rockwell International Corporation, a major supplier of foundation brakes and axle systems to the heavy vehicle industry, doubted that the dynamometer requirements would conform perfectly to the new vehicle stopping distance requirements. Rockwell estimated that 10 to 12 months might be required to accomplish adequate testing and reevaluation of brake sizes. The company suggested that all dynamometer requirements be suspended for an indefinite period.

The NHTSA did not propose such a broad revision of the standard and would have to propose such changes before they could be implemented. Furthermore, a suspension of requirements without certainty as to their status at an unknown future date would reintroduce an element of uncertainty that Rockwell and many others cautioned against. For this reason, the modifications are implemented as proposed, and the NHTSA does not intend to act on Rockwell's recommendation.

No objections were received on the general reduction of brake fade and recovery performance and the air pressure values are amended as proposed. The ATA noted its support of the new values only if it permitted front axle brakes without antilock. Vehicle manufacturers generally stated that limited testing did not permit unqualified endorsement of the new values. The California Department of Highway Patrol (CHP) suggested that a change of deceleration rate would be more realistic than the proposed change of air pressure actuation. In response to the CHP concern, it is noted that the increase in air pressure was chosen as the means to revise requirements so that the years of data developed in the past could be used for calculations of the new values. The NHTSA agrees with the CHP that a reduced deceleration rate would be more realistic if it were a feasible choice.

The "hot stop" deletion was also supported, though most comments on the proposal stated that the whole section should be deleted and not simply the last sentence. The NHTSA purposely did not delete the whole section, so that the sequence of testing would remain as in the past, to preserve the data on recovery that was developed following "hot stop" testing. Therefore the required test level is deleted as proposed, but the testing remains in the standard to maintain the same sequence as in the past.

The deletion of recovery requirements on the front axle of truck-tractors was also supported, as it was discussed in the preamble. The proposed language incorrectly executed the NHTSA's intent as expressed in the preamble. With the necessary corrections, the proposals are made final as proposed. The CHP suggested an easing of "hot stop" requirements in place of deletion, but the agency does not consider it has a sufficient basis for the choice of new values, given the other reductions in dynamometer stopping distance values.

The agency proposed reduction of retardation force requirements in the case of trailers to maintain balance with the longer distances permitted

for trucks. The modifications were supported, although K-B Axle Company qualified its support by noting that conforming linings might not be available immediately. The company suggested suspension of trailer retardation requirements. The NHTSA does not consider this suggestion meritorious, because it would leave no assurance of continued compatibility between the truck and trailer.

Based on further testing, Rockwell supplemented its original comments with a request for somewhat lower trailer retardation force levels than the 0.43 value proposed. The company justified a 0.40 value, based on variability experienced in the new testing. A second manufacturer of trailer axles (Eaton Corporation) supported a 0.40 value in meetings with the NHTSA. The new retardation values are therefore implemented as proposed although at slightly lower values. In response to the CHP question concerning the need for numbering columns, these designations are necessary so that any future revision can be easily noted with precision.

The NHTSA proposed reduction of parking brake performance levels for vehicles that operate in combination, so that the vehicles, taken together, would produce approximately the same holding power as single-unit vehicles. Although petitioners PACCAR and Freightliner asked for reduction of grade-holding levels for all vehicles (and repeated these requests in their comments), the NHTSA rationale for the proposal was to accomplish the far more limited purpose of reducing the cost and weight of 121-type parking brake systems on high-mileage tandem-axle vehicles that operate in combination.

As proposed, however, the proposal applied to towed and towing vehicles with a single non-steerable axle as well as those equipped with tandem-axle assemblies. It is obvious that the desired cost and weight reduction intended in the proposal (typically removal of one set of spring brakes from one axle) cannot be achieved on a vehicle with only one non-steerable axle. At the same time, the proposal would permit less powerful parking brakes on this vehicle category. The CHP pointed out that these single non-steerable-axle vehicles are commonly operated in doubles operation, when parking brakes become more important in view of the total combination grade-holding ability. The NHTSA concludes that the proposal in the case of vehicles with single non-steerable axles will not accomplish the intent of the proposal and is therefore withdrawn.

It also became apparent that the proposed reduction in parking brake retardation force for tandem-axle trailers could not be justified. The proposed change from a 0.28 value to a 0.23 value was calculated on the basis of the share of a full load that the typical trailer should hold in combination with a truck-tractor to equal the performance of single-unit vehicles. No petitions were received requesting the modification, but possible weight and cost reductions were considered possible. Fruehauf Corporation supported the proposal, while the Truck Trailer Manufacturers Association stated that cost savings were unlikely from the proposed change.

Unlike trucks and buses, trailers utilize the parking brake system as an emergency braking capability, in case of trailer "breakaway" or other failure of the service brake system. This parking brake system and emergency capability utilize the service brake friction elements and are thus directly dependent on the effectiveness of the service brakes. In view of the NHTSA decision to reduce trailer service brake effectiveness somewhat more than proposed, the agency considers that the vehicle's emergency braking capability would be reduced too much by a commensurate reduction of parking brake requirements. Therefore the parking brake proposal for trailers is withdrawn.

As for the tandem-axle truck-tractors for which the proposal was intended, it appears that the NHTSA estimate of a 0.17 retardation value was somewhat too high to accomplish the proposal's intent. PACCAR made several objections to any specification beyond that necessary to hold on a 15-percent grade. The company's testing showed that variability in materials and other factors required a 0.148 value in place of 0.17. Freightliner recommended a 0.16 value. White Motor asked for a .15 value and Rockwell recommended a .13 value. International Harvester supported the modification as proposed. NHTSA evaluation of submitted data indicates that a small decrease in the value from 0.17 to 0.14 is necessary to permit the intended deletion of

parking brake actuation mechanisms. Accordingly, the parking brake option of S5.6.1 is amended to reduce the retardation forces for tandem-axle truck-tractors.

The CHP made extensive and detailed comments on the parking brake proposal which have been evaluated by the NHTSA. The CHP submission assumed that only one non-steerable axle on buses and single-unit trucks would be equipped with parking brakes. This assumption apparently arose from a rearrangement of the wording of S5.6.1 that resulted in moving the phrase "on any axle other than a front steerable axle" in one subsection of the proposed modification. All other commenters understood the rearrangement and based their comments on the requirements as they have always existed for buses and single unit trucks.

In response to a petition from the ATA, the agency proposed a 0.20-second limit on minimum brake actuation timing of towing vehicles. The ATA asserted that the compatibility of towed and towing vehicles would be improved by a limit on minimum actuation speeds as well as the minimum actuation timing already specified. Responses on the proposal by the manufacturers of brake components and of air-braked vehicles generally opposed the imposition of minimum actuation times. Of the manufacturers that commented, Rockwell supported the proposal without stating its rationale, and PACCAR and Freightliner stated qualified support for a minimum value, if the limit on maximum actuation times was raised or eliminated. The CHP supported the proposal, although its engineering calculations were not expressed.

From the comments submitted, the NHTSA concludes that a minimum actuation time is an insufficient means to assure compatibility, and that further study of adequate means is advisable. Midland-Ross Corporation reminded the agency and industry that trailer response time is a separate but important portion of the problem. International Harvester argued that a limit on minimum actuation time might inhibit other modifications to improve compatibility. For these reasons, the proposal to impose minimum actuation times is withdrawn.

Manufacturers indicated that the 0.40 maximum actuation time was discouraging the slower actuation time desired by the ATA. The agency concludes that the ATA request can in part be met by an increase in permissible actuation time in place of the requested limitation on minimum actuation times. For this reason, the maximum permissible actuation time for trucks and buses is modified to 0.45 seconds from 0.40 seconds (S5.3.3).

The delayed effective dates for certain categories of specialized vehicles were also addressed by the proposal. In view of the uncertainty introduced by the proposal regarding the performance levels, the agency considered it necessary to delay the effectiveness of the standard further for these vehicle classes.

Reaction to this proposal in the case of fire-fighting vehicles (delay from March 1, 1976, to September 1, 1977) was not uniform. The Fire Apparatus Manufacturers Division of the Truck Body and Equipment Association supported the delay because custom vehicles utilize Rockwell antilock systems similar to those utilized on some buses. In the cases of buses, a major provision of the standard was suspended for a 1-year period to permit resolution of certain problems in the antilock system. Several small manufacturers also supported the delay. Other manufacturers indicated their readiness to meet the standard and asked that it not be delayed. Oshkosh has been building 121-equipped vehicles for some time and stated its reliance on the March 1, 1976, date as the basis for preparations to commence production of the new systems in fire trucks by March 1976. American-LaFrance, a large manufacturer of fire fighting vehicles, also requested implementation of the standard as scheduled for fire fighting vehicles.

In view of the statements of readiness by fire fighting vehicle manufacturers, the NHTSA has concluded that the standard should be implemented as soon as possible. The Rockwell antilock system on trucks has not evidenced reliability problems like those on buses that would justify a suspension of the requirements that underlie their use. However, the NHTSA proposal has justifiably permitted manufacturers to modify their plans and readiness, and the agency concludes that a short delay is necessary to allow preparations for the standard's implementation. Accordingly, the effective date for fire fighting

vehicles is delayed from March 1, 1976, to June 1, 1976.

The Heavy Specialized Carriers Conference of the ATA, Fruehauf Corporation, the Truck Trailer Manufacturers Association, and Birmingham Manufacturing Company all supported the proposed delay until September 1, 1977, of the standard's applicability to heavy hauler trailers. No objections were received on the proposed delay for auto transporters and vehicles with a gross axle weight rating (GAWR) for any axle of 24,000 pounds or more, or two or more front steerable axles with a GAWR of 16,000 pounds or more for each axle. White Motor Corporation supported these delays as the minimum necessary, and supported a similar delay of the standard's full requirements for certain vehicles listed in S5.3.1.2. In view of the comments, the delays are made final as proposed.

The CHP expressed concern that other large and specialized vehicle categories are permanently excluded from the standard. The CHP anticipates that, in the absence of Federal requirements, a number of State regulations could be developed, some of which might be inadequate to ensure safety. The NHTSA is sympathetic to the concern, but at this time, considers it unwise to initiate the suggested rulemaking. Large axle and brake suppliers like Rockwell are absorbed in making calculations for the changes already proposed, and any further changes should await more deliberate and thorough review when more time is available. It is noted that American-Coleman has filed a petition for the exclusion of more vehicles from the standard. Until these conflicting requests are resolved, the CHP correctly notes that the States may continue to enforce their regulations against these vehicles.

With regard to heavy vehicles, the CHP asked for a clarification of the limits on what constitutes the "rated cargo load" in the NHTSA definition of "unloaded vehicle weight." The NHTSA permits the rated cargo load and the gross vehicle weight rating to be determined by the manufacturer. If the CHP believes it has a better means of making that determination, its suggestion will be considered when received.

Certain test procedures were questioned by commenters. Wagner asked for confirmation that unloaded truck-tractor tests do not include the use of an empty control trailer. Wagner is correct. Mack and Roadway Express suggested that unloaded vehicle tests should be run with the empty control trailer attached. This modification has not been proposed and will not be acted on. With the increased unloaded vehicle stopping distance requirements, the NHTSA finds that the generally longer "bobtail" truck-tractor stopping distances should not interfere with adequate "depowering" of overly effective brakes.

For testing, the NHTSA proposed that the control trailer braking capabilities remain at the same level as in the past, instead of being reduced to conform to the proposed longer stopping distance requirements of S5.3.1. As Wagner recognized, this proposal was intended to permit the continued usefulness of past test data in making new calculations of necessary towing vehicle capabilities. Wagner, Bendix, and the ATA warned that the values will no longer be representative of equivalent production trailer stopping capabilities. Vehicle manufacturers supported the continued use of the existing control trailer performance. The NHTSA concludes that, although the control trailer will be somewhat less realistic than is normally desirable, this consideration is outweighed by the importance of maintaining the usefulness of the large amount of data already developed in the years of preparing for implementation of the standard. Therefore the control trailer specification remains as it has in the past.

The CHP requested that certain abbreviations in the standard be made uniform, and Wagner suggested that the standard be published in its entirety. The NHTSA anticipates these actions at the time of the next codification.

The ATA questioned the statement that European braking practice differs from the traditional practice in the United States of weak front brakes. In response, the NHTSA notes the recent Commission of European Commities directive for improved vehicle capability specified a higher retardation ratio for the front axle of commercial vehicles than on the rear axle.

The Truck Equipment and Body Distributors Association did not state its position on the pro-

posals made, but indicated that the requirements of the standard as a whole present too great a burden on the association's membership. This issue is being litigated in the suit for review of the standard and, for this reason, is not discussed in this notice.

In light of the foregoing, amendments are made in Standard No. 121, *Air Brake Systems*, 49 CFR 571.121 . . . .

Effective date: February 26, 1976. Because these amendments effect the relaxation of requirements and create no additional burden upon any person it is found for good cause shown that an immediate effective date is in the public interest.

(Sec. 103, 119, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.50.)

Issued on February 26, 1976.

James B. Gregory
Administrator

41 F.R. 8783
March 1, 1976

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems

(Docket Nos. 75–7; 75–16; Notices 3 & 9)

This notice republishes in their entirety Standard No. 105–75, *Hydraulic Brake Systems*, and Standard No. 121, *Air Brake Systems*, because the number and complexity of recent amendments to these standards may have created confusion for some interested persons.

Standard No. 105–75 (49 CFR 571.105–75) was issued September 1972 (37 FR 17970, September 2, 1972) and has been amended numerous times since issuance. Although an up-to-date and complete text of the standard appears each year in the republished Code of Federal Regulations, several complex amendments have been made to the standard in the past year that are not reflected in the most recent up-to-date text. To assist interested persons who must be certain of the text's provisions, the agency herewith publishes the standard in its entirety. Interested persons are advised that amendments of Standard No. 105–75 may occur in the future, although no proposals are outstanding at this time.

In a related matter, General Motors Corporation has brought to the agency's attention an inadvertent deletion of one sentence from one section of Standard No. 105–75. A statement was added to the text of S5.1.5.2(a)(2) to permit an interim increase in permissible control force for the fifth wet recovery stop (40 FR 24525, June 9, 1975). Inadvertently, this sentence was deleted from S5.1.5.2(a)(2) in a subsequent rulemaking action (40 FR 42872, September 17, 1975), although the preamble to the notice made clear that "The new wording in no way modifies the meaning of S5.1.4(a)(2) and S5.1.5.2(a)(2)." To correct this omission, the sentence appears in this publication. It has been moved to S5.1.5.2(a)(1) because it concerns the maximum pedal force limit in that section, rather than the minimum pedal force limit in S5.1.5.2(a)(2) where it appeared in the past.

Standard No. 121 (49 CFR 571.121) was issued in February 1971 (36 FR 3817, February 27, 1971) and has also been amended numerous times since issuance. Several amendments have occurred since the most recent publication of the standard in its entirety. For the reasons cited with regard to Standard No. 105–75, the agency herewith publishes the standard in its entirety. Interested persons are advised that three proposals to amend the standard are outstanding (40 FR 45200, October 1, 1975) (40 FR 56920, December 5, 1975) (41 FR 20706, May 20, 1976) and that amendments to the text of the standard may be made in the future.

It has also been noted that a clarification could be made to the language of S3 of the standard that excludes until September 1, 1977, vehicles that combine with other vehicles to form auto transporters. The temporary exclusion was added to the standard in January 1975 (40 FR 1246, January 7, 1975). To make the effect of that action more clear the language in the second sentence of the text "or to any vehicle which" is changed in this republication to read "or that." This modification of the language has no effect on the requirements of this standard and notice and opportunity to comment are therefore found to be unnecessary.

In consideration of the foregoing, Standard No. 105–75 (49 CFR 571.105–75) and Standard No. 121 (49 CFR 571.121) are republished . . . .

(Sec. 103, 119, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegations of authority at 49 CFR 1.50 and 49 CFR 501.8.)

Issued on June 30, 1976.

Robert L. Carter
Associate Administrator
Motor Vehicle Programs

41 F.R. 29696
July 19, 1976

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems

(Docket No. 75–5; Notice 7)

This notice amends Standard No. 121, *Air Brake Systems*, to extend until June 30, 1977, the period in which bulk agricultural commodity trailers designed with a high ground clearance and other special features for use with farm tractors during harvest can meet emergency and parking brake requirements other than those specified in S5.6 and S5.8 of the standard.

Standard No. 121 (49 CFR 571.121) permitted this specialized agricultural trailer category the option, until June 30, 1976, of meeting the parking brake requirements of the standard (actuation by an energy source unaffected by air loss in the service brake system) or the air-actuated "breakaway" system that complies with Bureau of Motor Carrier Safety requirements (49 CFR 393.43). The National Highway Traffic Safety Administration established the June 30, 1976, date (41 FR 8347, February 26, 1976) to permit completion of the bulk agricultural commodity trailers necessary for the 1976 harvest season.

Titan Trailer Corporation petitioned for a year's extension of the option because the reasons cited by the agency for the option still exist, and the company plans to manufacture the specialized vehicles throughout the year.

The agency does not wish to limit the manufacture of these trailers to only one of the available systems. In fact, the agency has an outstanding proposal to broaden the available means to meet the parking and emergency brake requirements for all trailers in a closely similar fashion to the bulk agricultural trailer option (40 FR 56920, December 5, 1975). Because of the comprehensive nature of that proposed revision, it will not be acted on in the immediate future. The NHTSA concluded that the option should be extended for a period to permit the continued manufacture of these trailers as they have been manufactured. The extension was proposed July 6, 1976 (41 FR 27740).

Comments were received from Utility Trailer Manufacturing Company, Fruehauf Corporation, and Wesco Truck and Trailer Sales. All comments supported the proposal, and it is made final as proposed.

In accordance with recently enunciated Department of Transportation policy encouraging adequate analysis of the consequences of regulatory action (41 FR 16200, April 16, 1976), the agency herewith summarizes its evaluation of the economic and other consequences of the proposal on the public and private sectors, including possible loss of safety benefits. Because the option simply permits continued manufacture of these trailers in the same fashion as they have been manufactured to date, and because the possibility for misuse of the mechanical parking brakes appears to be great in this case, the agency concludes that there would be no new economic or environmental costs imposed by the action, and that there would be no significant loss of safety benefit in this case.

In consideration of the foregoing, the last sentence in paragraph S5.6 and S5.8 of Standard No. 121 (49 CFR 571.121) is amended by changing the date "June 30, 1976" to "June 30, 1977."

Effective date: September 24, 1976.

(Sec. 103, 119, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.50.)

Issued on September 22, 1976.

John W. Snow
Administrator

41 F.R. 43153
September 30, 1976

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems

(Docket No. 75–16; Notice 10)

This notice amends Standard No. 121, *Air Brake Systems*, to extend from January 1, 1977, to September 1, 1977, the existing suspension of service brake stopping distance requirements as they apply to buses. Editorial changes are also made.

Equipment used in transit and intercity buses to conform to the stopping distance requirements (S5.3.1) of Standard No. 121 (49 CFR 571.121) demonstrated a pattern of erratic behavior following implementation of the standard for buses on March 1, 1975. For this reason, the agency suspended these stopping distance requirements (including the "no lockup" requirement) to provide a period in which modified antilock hardware and newly introduced systems could be field-evaluated (41 FR 1598, January 6, 1976). Based on a petition for a longer suspension and on the agency's conclusion that the experience of a full year of antilock operation in all environmental conditions would be necessary to generate and analyze adequate data to make a sound decision in time to permit orderly planning of bus production, a further suspension to September 1, 1977, was proposed (41 FR 20706, May 20, 1976).

Comments were received from vehicle manufacturers and users, and from the two antilock system manufacturers that provide components for transit and intercity bus antilock systems. The National Motor Vehicle Safety Advisory Council did not take a position on the proposal. The Vehicle Equipment Safety Commission did not comment on the proposal. Interested persons are advised that Docket Nos. 74–10 and 75–5 are related to the subject of air brake system requirements.

The comments generally supported the proposed extension, and no commenter opposed the additional eight months for evaluation. AM General Corporation and Crown Coach requested that the suspension be extended to January 1, 1978, but did not provide data that would substantiate the need for additional time. Freightliner Corporation, Rockwell International, and the American Public Transit Association (APTA) recommended that the stopping distance requirements for buses be indefinitely suspended until justification for them is articulated, analysis of their "costs and other consequences" is set forth under Department of Transportation (DOT) policies (41 FR 16200, April 16, 1976), and extensive antilock system tests and evaluation have been completed.

The requests by Freightliner, Rockwell, and APTA demonstrate a possible misunderstanding of the regulatory action under consideration, and the agency therefore takes the opportunity to put it in perspective. The stopping distance requirements of Standard No. 121 are in place for buses, and the only modification in the standard being considered is an extension of the temporary suspension of those requirements. Thus, if the agency takes no further action, the stopping distance requirements resume on January 1, 1977. The agency's favorable action on the September 1, 1977, date only means that the stopping distance requirements resume September 1, 1977. No regulatory action to modify the requirements themselves is contemplated, and therefore no "impact evaluation" of these requirements would be appropriate under the DOT policies cited by APTA.

Concern has been voiced that the agency set forth its rationale for specifying stopping distance requirements (including "no lockup" performance) in the case of buses. Several

commenters appear to be under the impression that Standard No. 121 is directed solely to the elimination of jackknifing by truck-trailer combination vehicles. In fact the standard applies to air-braked straight trucks and buses because of the evidence that these vehicles are also involved in accidents due to vehicle instability and inadequate braking capabilities.

Jackknifing is only one severe result of the lateral instability caused by loss of traction due to locked wheels during braking. The same instability can also lead to sliding, "spin-out," and loss of steering capability in straight trucks and buses. The need for protection against such problems has been specifically addressed several times in earlier notices on the standard (e.g., 35 FR 10368, June 25, 1970; 39 FR 44480, December 24, 1974; 40 FR 24915, June 11, 1975; 41 FR 8783, March 1, 1976). Rockwell asked that further analysis be provided that would be directed specifically at the accident experience of buses. The company suggested NHTSA analysis of the recent Bureau of Motor Carrier Safety Report on "1973/74 Accidents of Motor Carriers of Passengers" and the data supporting the report. That report has been reviewed by the NHTSA, along with the individual bus accidents reports for 1975.

The report itself (available in the NHTSA docket and from BMCS) emphasizes highway, driver, and time and place aspects of the accidents without detailing information that would indicate accident causation. The individual accident reports, however, contain more complete information. Review and tabulation of information contained in the written descriptions of accidents provides the following facts:

1. In the year 1975, 750 bus accidents resulting in fatality, injury or a minimum of $2,000 in property damage were reported to BMCS.

2. Of the total, 322 (43 percent) were described in a way that indicates that braking occurred prior to the accident. Sixty-eight (9.1 percent) of the accidents were explicitly described as involving skidding due to locked wheels during braking. The 68 skidding accidents resulted in 6 fatalities, 296 injuries, and an average of $5,213 property damage per accident.

3. No antilock-equipped bus was involved in any of these skidding accidents.

The NHTSA does not claim that all of these accidents would have been prevented if the buses had been equipped with antilock systems. The accident descriptions are not detailed enough to estimate the effect of "no lockup" capability. But the evidence demonstrates that skidding accidents are common for buses, and it is reasonable to assume that a significant portion of those accidents could have been prevented or lessened in severity by no-lockup braking capability.

Claims by transit bus operators that transit buses should be excluded from the "no lockup" requirement because of their low-speed urban operation are not substantiated by the BMCS data. Although most of the buses subject to BMCS regulation are of the intercity type, the accidents involving skidding are seldom high-speed accidents. For those cases in which vehicle speed prior to the accident was reported, it averaged only 36 mph. Furthermore, approximately half of the skidding accidents occurred in residential or business areas. These conditions are typical of transit bus operation, and the NHTSA concludes that transit buses should be subject to minimum requirements for lateral stability and service brake stopping capabilities.

The issue at hand is whether the existing suspension of certain of the standard's requirements should be extended to September 1, 1977, to permit the accumulation of more test data on the suitability of modified and new antilock systems designed for buses. As noted earlier, erratic behavior of previous bus antilock designs formed the basis for the existing suspension. Recently, a manufacturer of cab-chassis for school buses has also reported a safety-related defect installation in some school buses.

On May 12, 1976, Rockwell submitted to the agency a proposed test program for its bus antilock system. The program called for 39 intercity and 85 transit buses to be equipped with the modified Rockwell system. Rockwell estimated an accumulation of more than 9.6 million axle miles of service by August 1, 1976. By August 20, 1976, Rockwell had equipped 27 intercity and 37 transit buses with revised components for testing. The number of test vehicles is less than originally planned, partly because of lack of cooperation by operators and State inspection officials, and partly because of Rockwell's decision

to withhold further installation of test units until the agency makes final the 8-month extension. By August 20, 27 inoperative occurrences had been reported in 1.4 million axle miles of transit bus operation. Rockwell did not report results of intercity bus operations, but Motor Coach Industries (a manufacturer of intercity buses) reported 16 inoperative occurrences in approximately 1.8 million axle miles of intercity service with the Rockwell system.

In its May 12 letter, Rockwell also announced a parallel experimental testing program for a new antilock system design. To date, only one of these units has been placed in transit system service, and it has accumulated over 20,000 miles without difficulty.

The AC Division of General Motors has also been testing an antilock system for buses. As of October 26, AC had installed its antilock system in 10 transit buses and 11 intercity buses. An additional 13 transit bus installations are planned in the near future. The transit buses range from zero to three months of service, with no problems encountered. Motor Coach Industries reported one inoperative occurrence in the six AC installations they have made, with an accumulated mileage of approximately 0.8 million axle miles. The other five AC-equipped intercity buses have experienced no problems after about one month of service.

AC Division indicated in its comments on the proposal that, barring any unforeseen difficulties, production AC antilock systems will be available for buses manufactured on and after January 1, 1977. As of the date of this notice, AC Division has not notified the NHTSA of the development of any "unforeseen difficulties." Based on this information and analysis of the reliability data furnished to date, the agency has decided to amend Standard No. 121 as proposed to extend the suspension of bus stopping distance requirements to September 1, 1977. The preliminary data indicate that a reliable antilock system will be available in time for reinstatement of the requirements, and a further delay is not contemplated.

An issue related to this decision on bus stopping distance requirements was raised in the comments to the proposal. Rohr Industries and International Harvester requested that the suspension of stopping distance (and "no lockup") requirements be made "retroactive" to buses manufactured since the effective date of Standard No. 121 but prior to the January 6, 1976, commencement of the suspension.

The statutory and regulatory scheme under which the standard was promulgated do not provide for such "retroactive" action. Section 108 (a)(1)(A) specifies that a vehicle shall comply with standards in effect on the date of its manufacture. Part 571 of NHTSA regulations also state: ". . . each standard set forth in [Part 571] applies according to its terms to all motor vehicle or items of motor vehicle equipment the manufacture of which is completed on or after the effective date of the standard" (49 CFR 571.7). In this case, antilock systems have been disconnected because of safety-related defects in their operation. Under § 154 of the Act, the vehicle manufacturer must provide an adequate repair of safety-related defects, unless replacement of the vehicle, or refund of the purchase price, is undertaken. "Adequate repair" is defined in § 159(4) not to include "any repair which results in substantially impaired operation of a motor vehicle or item or replacement." The permanent disconnection of an antilock system would be considered by the NHTSA to constitute substantial impairment of the motor vehicle. Of course, the vehicle owner is entitled to decline an offer of repair by the manufacturer.

In a matter unrelated to the proposal, the agency takes the opportunity to make several editorial changes to the text of Standard No. 121. A correction in S5.1.7 ("statically" in place of "statistically"), conformance of the auto-transporter effective date in S5.3 to the correct date in S3 (September 1, 1977), and deletion of an obsolete reference to S5.3.1.3 in S5.3.1 are all effectuated. Additionally, options that terminated in June and September 1976 are deleted to simplify the standard's text.

In accordance with Department of Transportation policy encouraging adequate analysis of the cost and other consequences of regulatory actions (41 FR 16200, April 16, 1976), the NHTSA has evaluated the economic and other consequences of this amendment on the public and private

sectors, including possible loss of safety benefits. The agency estimates that there will be a cost to society due to the delay, because of the decreased stability of buses produced without "no lockup" capability. However, the potential for accidents due to possible malfunction of the new antilock components exists in the absence of the longer suspension. Also, there are costs associated with the increased maintenance that could result from reintroduction of antilock systems earlier than September 1, 1977.

In consideration of the foregoing, Standard No. 121 (49 CFR 571.121) is amended . . . .

Effective date: November 26, 1976.

(Sec. 103, 119, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.50.)

Issued on November 19, 1976.

John W. Snow
Administrator

41 F.R. 52055
November 26, 1976

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems

(Docket No. 75–16; Notice 12)

In response to two petitions for reconsideration of earlier rulemaking and to related requests, the NHTSA has extended for four months the existing suspension of the bus service brake stopping distance requirements contained in Standard No. 121, *Air Brake Systems*, along with an additional 3-month extension for school buses. A manufacturer of intercity buses and a manufacturer of school bus chassis petitioned to extend the suspension, which was scheduled to end September 1, 1977. The delay in reaching a decision on the petitions has made a short extension desirable.

Effective date: June 13, 1977.

For further information contact:

George Reagle
Office of the Administrator
National Highway Traffic Safety Administration
400 Seventh Street, S.W.
Washington, D.C. 20590
(202 426–1836)

BACKGROUND

Standard No. 121 (49 CFR 571.121) regulates the braking system performance of air-braked trucks, buses, and trailers. The standard has been in effect for trailers since January 1, 1975, and for trucks and buses since March 1, 1975. Following implementation of the requirements for buses, a pattern of erratic behavior developed in the performance of the antilock system used by manufacturers of transit and intercity buses to satisfy the "no lockup" requirements of the standard (S5.3.1). At an October 1975 public meeting the bus operators and manufacturers involved reviewed their experiences with implementation of the standard and expressed their views on potential safety hazards of antilock malfunction. Based on these and other reports, the NHTSA proposed a suspension of the service brake stopping distance requirements (including the "no lockup" requirement) to provide a period in which modified antilock hardware and newly introduced systems could be field-evaluated (40 FR 52856; November 13, 1975). The proposed suspension of 1 year until January 1, 1977, was made final January 6, 1976 (41 FR 1598; January 9, 1976). Several vehicle manufacturers and user groups argued that the suspension should be for a longer period and the suspension was subsequently extended from January 1, 1977, to September 1, 1977 (41 FR 52055; November 26, 1976).

PETITIONS AND REQUESTS FOR DELAY

Motor Coach Industries (MCI) and its parent company Greyhound Corporation have asked that the termination of the suspension for service brake requirements be delayed until January 1, 1979, in the case of intercity buses. The American Public Transit Association (APTA) also petitioned for the same delay in the case of both intercity and transit buses. The Chicago Transit Authority (CTA) recommended complete exclusion of transit buses from the standard, although the arguments in their letter only address the "no lockup" requirement, and the CTA may have meant to request exclusion from this requirement only.

Transit and intercity buses use a distinctive axle configuration, and only one supplier of antilock components for the axle exists. The supplier, AC Division of General Motors, has indicated its readiness to supply antilock components to transit and intercity bus manufactur-

ers (and those school bus manufacturers that utilize the same distinctive axle).

International Harvester (IH) petitioned for reconsideration of the September 1977 termination date for stopping distance requirements in the case of air-braked school buses, arguing that reliability testing of new sensor and mounting components would require continuation of the suspension until mid-April 1978. IH had reported a safety-related defect in its school bus antilock system in July 1976 due to vibration-induced "false cycling" problems associated with the school bus duty cycle. While IH and its antilock supplier are not experiencing reliability problems with the new antilock component used on school bus chassis, the company wishes to accumulate at least 6 months of field evaluation before going into production. IH and Kelsey-Hayes (its antilock supplier) met with the NHTSA engineering staff on February 17, 1977, to provide information on the field evaluation. That meeting was followed by additional meetings and a detailed letter request to Kelsey-Hayes for further durability testing data.

This notice also responds to a recommendation on the bus suspension from the Truck and Bus Safety Subcommittees of the National Motor Vehicle Safety Advisory Council and the National Highway Safety Advisory Committee. These subcommittees were established by the Secretary of Transportation to provide recommendations on truck and bus safety. At the request of former NHTSA Administrator John Snow, the subcommittees convened in March 1977 to address the issue of Standard No. 121's implementation. From that meeting, the subcommittees recommended, among other things, continuation of the suspension of service brake requirements for buses until January 1, 1979. The American Trucking Association (ATA) has since petitioned the NHTSA to adopt this and related recommendations of the subcommittees.

EVALUATION OF THE PETITIONS

While most of the petitions, requests, and recommendations were not accompanied by supporting information, the MCI and IH petitions included data on reliability testing to support their requests. Data on the AC Division system used on intercity, transit, and some school buses was evaluated separately from the data on the Kelsey-Hayes system used by IH on its school bus chassis.

Intercity and Transit Buses. When the bus service brake stopping distance suspension was proposed in November 1975, AC Division indicated that it would enter the intercity and transit bus antilock market, and MCI agreed to have one of its intercity buses equipped with AC equipment. MCI equipped a second bus with AC equipment on an experimental basis and subsequently installed four more systems on a production line basis in 1976.

The 1-year suspension was made final in January 1976. In May 1976 the agency proposed continuation of the suspension to September 1977 "to have the experience of a full year of antilock operation in all environmental conditions, particularly in the winter season" and to permit reaching "a sound decision in time to permit orderly planning of bus production."

In making final the 8-month extension in November 1976 the agency noted AC Division's test experience with bus antilock systems (including data on MCI buses) and AC's position that it expected to have antilock ready as production hardware by January 1, 1977. The NHTSA therefore notified the public that "The preliminary data indicate that a reliable antilock system will be available in time for reinstatement of the requirements and a further delay is not contemplated" (41 FR 52057; November 26, 1976). In a February 1977 meeting with the NHTSA, AC Division indicated that it has production hardware ready on a 4-month leadtime basis, and that General Motors is prepared to equip its own production of intercity, transit, and school buses with its product starting September 1, 1977.

AC Division field-evaluated its system on GMC buses (both intercity and transit), on Flxible transit buses, on one Prevost intercity bus, and on MCI intercity buses. AC reported to the NHTSA on 34 installations, of which six were MCI buses. Data were reported on the MCI buses both for an early generation of components and for a later set. Second generation computers were supplied so that common computers with a new diagnostic feature could be used on trucks and buses. Prototypes of second

generation sensors were provided to account for bus brake temperatures that are higher than those of trucks, and to prevent water intrusion in the new design.

In analyzing reported malfunctions on the MCI buses, the agency eliminated three "burned out" computer failures that occurred while the bus was in the shop and were caused by a mechanic's negligence that permitted a "severe load dump" to the electrical system. A malfunction caused by improper bearing adjustment was also eliminated. As of April 25, 1977, 5 malfunctions had occurred during 2.8 million axle miles of travel (187,000 vehicle miles per failure). The malfunctions were "fail safe" and all occurred before the corrections discussed above. Mileage since the corrections produced no malfunctions.

The AC Division bus antilock system is essentially the same as AC truck systems that have proved reliable in service since their introduction in early 1975. While the agency does not dispute MCI's view of what level of testing it considers appropriate, the NHTSA has confirmation by General Motors, as a manufacturer of both intercity and transit buses, that they are confident of the AC Division system and are prepared to place it on their vehicles.

At the same time, the second generation sensor is entering production at this time for installation on trucks, and production units will be available for further evaluation in the more demanding bus application. In view of this opportunity for evaluation of redesigned sensors built on production tooling, and in view of the agency's delay in responding to the petitions for reconsideration, it is concluded that a short continuation of the suspension until January 1, 1978, is justified. Accordingly, on reconsideration of the September 1, 1977, termination date established last November, the NHTSA hereby extends the suspension to January 1, 1978, for transit and intercity buses.

The CTA asked for total exclusion of transit buses from the standard but addressed only the issue of antilock system reliability. APTA petitioned for continuation of the suspension for both transit and intercity buses, although the association's arguments addressed only transit buses. APTA reviewed experience with the Rockwell system that had developed problems in early 121-equipped buses, cited the subcommittees' recommendation for further delay, and recommended the initiation of a 6-month 200-vehicle fleet test prior to implementing the service brake stopping distance requirements.

The NHTSA has analyzed the two petitions and does not believe that they provide additional information that would justify a delay beyond January 1, 1978, for these buses. The CTA did not provide data that would substantiate its assertions that radio frequency interference (RFI) is a problem, or that transit buses do not require "no lockup" performance. The NHTSA believes the references to RFI refer to the past system used on buses. AC Division has detailed the precautions it has taken against RFI, and it has had field experience with its system on trucks for more than 2 years. The safety need for "no lockup" performance on transit buses was discussed by the NHTSA in the November 1976 notice cited earlier, and the agency maintains its view of the desirability of this safety feature.

The majority of APTA's comment addressed the Rockwell system that is no longer in use. The only comment about the AC Division system pointed out the introduction of the second generation sensor in June 1977 and concluded that a 200-bus fleet test of the antilock components would be desirable. The NHTSA has explained above why it considers a 4-month delay adequate to be assured of reliability of this component. As to the size of the test fleet, it is the agency's view that the APTA membership could have tested 200 units on its transit bus fleets during the past 18 months if it had cared to. The agency is not aware of APTA objections to the size of the AC Division test effort at the time it was constituted as a 34-bus fleet.

School buses. In the case of air-braked school buses, a comparable situation has arisen to that of intercity and transit buses. Second generation componentry for IH buses has been introduced by Kelsey-Hayes, no reliability problems have been encountered, and the subcommittees also recommended continuation of the suspension. While the same considerations argue for a 4-month delay, the agency does not have as many miles of field data on the newly designed sensor

and mounting bracket upon which to make a judgment of system reliability as it did in the case of the AC Division system and its new sensor. In addition, most school buses receive little or no use during the summer months. For this reason the NHTSA concludes that the full period of delay requested by IH in its petition for reconsideration should be allowed. In this period, approximately 100 new sensor installations will be monitored to provide full assurance of system reliability. Accordingly, 3 additional months of suspension have been provided in the case of school buses only.

TRUCK AND BUS SAFETY SUBCOMMITTEES

The NHTSA Administrator invited the subcommittee's Chairman to hear a presentation of NHTSA findings on the issue of continued suspension for buses. That invitation was expanded to include those members of the subcommittees that wished to accompany the Chairman to the April 22, 1977, briefing. Although not planned as a meeting of the subcommittees, a summary of the meeting has been prepared for submission to the public docket.

The subcommittees heard the agency's views and offered their own. The agency weighed the points made by the subcommittees in support of a delay until January 1, 1979, but concluded that adequate field-testing time would be available to make preparations for meeting the full requirements of Standard No. 121 by January 1, 1978, in the case of transit and intercity buses, and by April 1, 1978, in the case of school buses. The American Trucking Associations had petitioned the NHTSA to follow the subcommittees' recommendation of a January 1, 1979, effective date for buses and other enumerated vehicles. To the degree that this decision does not grant the American Trucking Associations' petition relative to buses, it is denied for the reasons set forth above. Other items in the ATA petition will be treated in subsequent notices.

At the meeting the agency expressed its view that it is incumbent on a manufacturer asking for more test time to explain why its test programs had not been enlarged to proportions that would give adequate assurance of reliability by the scheduled termination date. Opportunities to expand the test program in this case existed in November 1976 when the agency stated it contemplated no further delay and again in January 1977 when Rockwell withdrew as a supplier of antilock systems. The agency urged expansion of test programs when requests for further delay were received. Contacted about the size of its test fleet, MCI indicated that the test fleet was kept small in the first instance so that it could be carefully moniored to avoid accidents. Only after some confidence in the safety of the new components is accumulated will MCI expand its programs to a larger number of buses.

The agency knows that it cannot and should not design a manufacturer's test program. At the same time, the agency cannot be prevented from carrying out its safety mission simply by the decision of a manufacturer not to undertake design and testing of safety systems proposed by the agency. It is obvious from the legislative history of the National Traffic and Motor Vehicle Safety Act that Congress intended the manufacturers to be responsive to the agency's proposals for upgrading safety systems.

While the agency has not adopted completely the recommendation of the subcommittees in the case of buses, their recommendations have formed the basis of several significant actions by the Department of Transportation. Noteworthy in this regard is the decision by the Federal Highway Administration's Bureau of Motor Carrier Safety (BMCS) to commence "courtesy inspections" of 121-equipped vehicles later this year. In the near term, these courtesy inspections are for informational, educational, and training purposes, and are intended to form the basis for future BMCS compliance inspections.

In consideration of the foregoing, the phrase "Except for a bus manufactured before September 1, 1977" in S5.3.1 of Standard No. 121 (49 CFR 571.121) is amended to read "Except for a school bus manufactured before April 1, 1978, or any other type of bus manufactured before January 1, 1978."

The economic and inflationary impacts of this rulemaking have been evaluated in accordance with Office of Management and Budget Circular

A–107, and an Economic Impact Statement is not required.

Because the amendment delays requirements that would otherwise become effective and does not create additional obligations for any person, the agency finds that the amendment may become effective immediately.

The program official and lawyer principally responsible for this rulemaking are Duane Perrin and Tad Herlihy, respectively.

(Sec. 103, 119, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.50.)

Issued on June 7, 1977.

Joan Claybrook
Administrator

42 F.R. 30188
June 13, 1977

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems

(Docket No. 75–16; Notice 15)

This amendment adds a small number of vehicles to the category of oversize and specialized vehicles that are permanently excluded from the applicability of Standard No. 121, *Air Brake Systems*, extends the existing temporary exclusion of heavy hauler trailers and auto transporters until January 1, 1979, and eliminates the "no lockup" requirement in the case of trailers designed exclusively for harvesting lumber or pulpwood, and in the case of inboard wheels on trailers with more than four wheels on an axle system. The amendment responds to manufacturer petitions for exclusion from some or all of the requirements of the standard because of the vehicles' distinctive configurations and functions.

Effective date: August 22, 1977.

Addresses: Petitions for reconsiderations should refer to the docket number and be submitted to: Room 5108, Nassif Building, 400 Seventh Street, S.W., Washington, D.C. 20590.

For further information contact:

Duane Perrin
Office of Crash Avoidance
National Highway Traffic Safety Administration
Washington, D.C. 20590
(202–426–2153)

Supplementary Information: Standard No. 121 (49 CFR 571.121) regulates the braking system performance of air-braked trucks, buses, and trailers, and has been in effect for trailers since January 1, 1975, and for trucks and buses since March 1, 1975. Certain vehicles were excluded from the standard's applicability because their functions or construction dictate oversize or distinctive operational characteristics that result in restricted highway operation (e.g., low speed, permit requirements, daytime operation), which limits hazards and the possibility of accidents. Also their distinctive configurations and low production volumes increase compliance costs.

Because of unavailability of components and other constraints, certain other vehicle categories were excluded from all or some of the standard's requirements for a temporary period. The temporary exclusions that remain in effect are scheduled to end on September 1, 1977.

Several vehicle manufacturers and trade associations petitioned for extension of some of the temporary exclusions, or conversion of them into permanent exclusions. The Truck and Bus Safety Subcommittees of the National Motor Vehicle Safety Advisory Council and National Highway Safety Advisory Committee recommended to the Secretary of Transportation that particular vehicle types be granted full or partial exclusions from the standard.

Based on consideration of the petitions and on the recommendations of the Truck and Bus Safety Subcommittees, the NHTSA proposed several new permanent exclusions from the standard. The 108-inch-width exclusion was proposed for expansion to include vehicles with a width of more than 102 inches. In all states other than Hawaii, vehicles of this width are allowed on the highway only in permit operation. The agency finds that these vehicles are operated with the same level of care as vehicles of 108 inches in overall width. No adverse comment was received on the proposal and it is accordingly made final.

The agency proposed permanent exclusion of vehicles whose gross vehicle weight rating (GVWR) exceeds 120,000 pounds, under the assumption that such vehicles always operate under restrictions of state motor vehicle administrations. Comments were solicited on whether such vehicles exist that are not already excluded from the standard under another category, and whether such vehicles ever operate in unrestricted highway use. Fruehauf, Rogers Brothers, and Talbert Trailers pointed out that Michigan allows unrestricted highway operation of certain trailers in excess of 120,000 lbs. GVWR. These trailers may be flatbeds, tankers, or dump bodies with 8 or more axles and are currently being built to conform to the standard. Low bed heavy hauler trailers, on the other hand, must have their axles aft of the load, and do not have room for as many as eight axles without exceeding the state length limit requirements, and hence are still subject to restricted operation. It is apparent that the exclusion should be narrowed so that its language reaches only those vehicles originally intended for exclusion. It appears that only low bed "heavy hauler" trailers in this weight range fall under state operating restrictions. As made final, therefore, the exclusion is narrowed to cover only a trailer that has a GVWR of more than 120,000 pounds and a body that conforms to the height limitation for heavy hauler trailers of 40 inches. Fruehauf suggested a 44-inch deck height criterion, but offered no supporting information, and the NHTSA sees no reason to change from the 40 inches presently specified for heavy hauler trailers.

The third proposed permanent exclusion was for "load divider" dollies that are designed exclusively for use with the larger trailers that are already excluded from all the requirements of the standard. This addition was supported, but the Truck Trailer Manufacturers Association (TTMA) and others requested a correction in the description of the vehicle. The agency referred to the "fifth wheel plate" of the dolly which improperly described the connecting or mating devices employed. The proposal is made final, with an appropriately broader statement of vehicle description.

Several commenters argued for additional permanent exclusions from the standard. Schwartz Manufacturing Company asserted that the "heavy hauler" trailers that are currently excluded from the standard for a limited period should all be permanently excluded because of their off-highway use and their typical ownership by a small company with limited maintenance resources. The agency has proposed and is making final an extension of the existing temporary exclusion while it develops more data on the difficulty encountered by manufacturers in constructing these vehicles to comply with the standard. Information requests have been issued by the agency and replies have been received which are presently undergoing analysis. Until analysis is completed, it would be premature to act on the Schwartz request, and it is therefore declined.

Master Truck, the City of San Diego, and the Lake Disposal Corporation supported the Truck and Bus Safety Subcommittees' suggestion to exclude refuse trucks from Standard No. 121 entirely, or at least from the "no lockup" provision. The commenters pointed out that the duty cycle of these vehicles differs from that for highway tractor-trailer combinations and that much of the travel is at low speeds between pick-ups. The City of San Diego pointed out that it must purchase from the low bidder, which can result in having to service several of the commercially available antilock systems, thereby compounding maintenance problems. The agency does not dispute these points, but also does not view them as peculiar to the brake systems of these vehicles. Refuse collection and hauling presumably do put distinctive strains on a vehicle, and the problem of low-bid contracting does occur in municipal fleet maintenance. It is assumed that such problems with braking and other vehicle systems occurred prior to implementation of Standard No. 121 and that adaptive steps were taken to compensate for them. It is conceivable, in fact, that some of the adaptations (such as the use of longer wearing but less effective brake linings) may have reduced somewhat the braking capability of some refuse haulers in relation to vehicles of comparable size that serve other functions. It is the agency's considered

judgment that the duty cycle of a particular vehicle type should not be fully determinative of its braking capability or general safety characteristics. For this reason, the agency declines to act on requests for exclusion of these vehicles but will continue to give consideration to this and other proposed adjustments in the standard's applicability.

Zieman Manufacturing Company asked that trailers with a GVWR of 10,000 pounds or less with air-over-hydraulic brakes be excluded from the standard's applicability. Such an exclusion was proposed in June 1975 (40 FR 24915, June 11, 1975) in response to the petition of Altec Industries. On the basis of comments received, particularly those of the California Highway Patrol, it was decided not to provide such an exclusion because of the potential for abuse of the category. The Zieman request is therefore not adopted.

No comment was received from any mobile crane manufacturer on the wisdom of continuing the present limits for these vehicles: exclusion of larger categories only, unless top speed is restricted to 45 mph. In the absence of comment, the agency has decided to leave the present exclusions affecting mobile cranes unchanged, except for the over 102-inch width exclusion previously discussed.

It is noted that the existing permanent exclusion of non-cargo-carrying trailers was inadvertently restated in the proposal in exactly the opposite form from that intended. The error is corrected in this amendment.

As a general matter, the continuation of temporary exclusions for heavy hauler trailers and auto transporters was supported. Little information was provided in the comments on the readiness of manufacturers to implement the standard by January 1, 1979. Information requests have been sent to the affected manufacturers to develop additional data. Freightliner Corporation, as the manufacturer of incomplete truck tractors for auto transporter combinations, argued for the indefinite exclusion of these combinations from the standard.

Freightliner's first argument was that the high center-of-gravity characteristics of the towing vehicle (car carired over the cab) and the unique load transfer characteristics of the articulation point on some auto transporters can produce effects which combine to offset the advantages of imposition of the standard on these vehicles. The agency understands that these factors can make compliance for auto transporters more difficult, and has acknowledged this fact by proposing an effective date for auto transporters that is four years after the initial effective date for other highway vehicles. However, the agency is also aware that auto transporters can be (and have been) built to comply fully with the present requirements of the standard. If Freightliner or any other interested party has data to show that the present requirements are insufficient to ensure a safe braking system for auto transporters, the agency solicits their suggestions for improvements.

As a practical matter, the agency has stated (May 5, 1975, NHTSA letter to E. Hammond, Trailmobile Tech. Center) that it will use the chassis manufacturer's load limitations, both weight and center-of-gravity, for purposes of determining compliance. Thus Freightliner's "envelope" of specifications in its incomplete vehicle document would be the outside limit for loading the completed tractor for compliance test purposes. The only limitation on this method would be an "envelope" of specifications so conservative that the braking characteristics of the vehicle as completed would constitute a safety-related defect.

The second point raised by Freightliner is that the testing procedures in the standard may need to be modified before tractors and trailers of the auto transporter combination can be tested separately. During the period of continued delay, the NHTSA intends to call a public meeting to discuss this problem with the affected chassis-cab manufacturers and the auto transporter industry. Freightliner's suggestion for indefinite delay appears unnecessary and, accordingly, is declined.

Freightliner's third argument was that, assuming that incompatibility between the tractor and trailer portions of an auto transporter is great, the agency should not require their compliance with the standard until all incompatibility is removed from all air-braked vehicle combinations subject to the standard. Actually, the compatibility problems between tractor and trailer are probably less in the case of auto transporters than other combinations because there is more pairing of tractors and trailers in this industry than in the case of dry freight vans. The NHTSA tests mentioned by Freightliner will be completed prior to the January 1, 1979, effective date for auto transporters.

PACCAR, Inc., and Mack Trucks, Inc., both commented favorably on the American Trucking Association's request to continue the exclusion of, vehicles equipped with an axle with a gross axle weight rating (GAWR) of 24,000 pounds or more. The agency did not propose continuation because no vehicle or axle manufacturer had petitioned for delay, and because there was strong evidence that the exclusion was being abused by manufacturers who would provide a highe-than-normal rating to avoid the requirements of the standard. PACCAR's expectation that few such vehicles are built because permits are required for loads of more than 24,000 pounds on an axle is not to the point. It is not the gross vehicle weight on the highway that is controlling here, but simply the capacity of the axle installed by the manufacturer. In other words, the vehicle could obtain complete exclusion by the installation of heavy axles, whether or not they are ever used on the highway at full capacity requiring permit operation.

Mack noted the many truck types (*e.g.*, cement mixers, dump trucks) whose permits, if any, do not closely control the actual operation of the vehcile. As a practical matter, these vehicles operate in unrestricted operation with extremely heavy, and often high center-of-gravity, loads that necessitate extremely good braking. The agency continues to believe that an exclusion at this GAWR level is unjustified. The 29,000-pound exclusion reflects the larger vehicles with truly distinctive configuration and more specialized operation that justify special treatment.

Mack, PACCAR, and the ATA also recommended extension of the exclusion for vehicles with two or more steerable axles with a GAWR of 16,000 pounds or more for each axle. No supporting data was presented and no other comments were received. In the absence of any supporting data the request is denied.

The partial exclusion from the "no lockup" requirement in the case of "wheels other than the outermost on an axle system with more than four wheels" was supported without comment and is therefore made final. Rogers Brothers suggested that use of "axle system" to describe the row of wheels across the vehicle could be misleading. The agency's use of the term as part of its certification requirement to state "axle system" GAWR has not proved troublesome. On the basis of this experience, the terminology is made final as proposed.

The TTMA suggested that the exclusion of certain logging and pulpwood trailers from the "no lockup" requirement be expanded to permit them the same parking brake option as is provided to agricultural commodity trailers. While not within the scope of this notice, the agency will consider this suggestion in its next parking brake proposal.

While the Truck and Bus Safety Subcommittees did not take a position on the proposal, it is noted that their June 23, 1977, letter to Secretary Adams reaffirmed their eariler recommendations for revision of Standard No. 121.

The economic impact of this rule has been considered and has been determined to be minimal. This is due primarily to the low production volume both collectively and by individual firms and the brief leadtime remaining to make considerable design changes. This could even cause substantial adverse economic and financial impacts if these manufacturers were forced to comply by the September 1, 1977, effective date. However, it has also been determined that the additional leadtime provided by this Final Rule should be sufficient to modify production lines which would incorporate the necessary design changes to accommodate the FMVSS 121 hardware.

In consideration of the foregoing, Standard No. 121 (49 CFR 571.121) is amended. . . .

Effective date finding. Because these amendments relieve a restriction and do not create additional responsibilities for any person, it is found that an immediate effective date that advises manufacturers of the new requirements as soon as possible is in the public interest.

The program official and lawyer principally responsible for this rulemaking document are Duane Perrin and Tad Herlihy, respectively.

(Sec. 103, 119, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.50)

Issued on August 16, 1977.

Howard Dugoff
Acting Administrator

42 F.R. 42208
August 22, 1977

PREAMBLE TO AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems

(Docket No. 75–16; Notice 14)

The amendment extends indefinitely an existing option for specialized agricultural trailers under Standard No. 121, *Air Brake Systems*, of meeting the parking brake requirements of the standard or the air-actuated "breakaway" requirements of the Bureau of Motor Carrier Safety. The option exists because the working environment of the trailers can lead to disabling of the parking brakes, and a solution to the underlying technical problems has not been perfected.

Date: Effective date June 27, 1977.

Addresses: Petitions for reconsideration should refer to the docket number and be submitted to: Room 5108, Nassif Building, 400 Seventh Street, S.W., Washington, D.C. 20590.

For Further Information Contact:

Scott Shadle
Office of Crash Avoidance
National Highway Traffic Safety Administration
Washington, D.C. 20590 (202) 426–0852

Supplementary Information: Standard No. 121 (49 CFR 571.121) permitted some bulk agricultural commodity trailers the option, until June 30, 1977, of meeting the parking brake requirements of the standard (actuation by an energy source unaffected by air loss in the service brake system) (S5.6.3) or the air-actuated "breakaway" system that complies with Bureau of Motor Carrier Safety (BMCS) requirements (49 CFR 393.43). Most manufacturers use the stored energy of a compressed spring to apply and maintain the required braking force required by S5.6.3.

Manufacturers petitioned for modification of this parking brake requirement in the case of some agricultural trailers because they often are dropped off near the fields by highway tractors and then towed into the fields by farm tractors. The farm tractors do not have air compressors to recharge the air supply and release the brakes in order to move the vehicles. When the spring brakes are mechanically released to allow movement they may not be re-engaged for highway operation, permitting the trailer to operate on the highway without a secondary means of braking. To avoid the hazard of on-highway operation with disengaged spring brakes, the agency adopted the option for a limited period.

Wesco Truck and Trailer Sales petitioned for extension of the option to December 31, 1978, and Utility Trailer Manufacturing Company petitioned for its indefinite continuation. The agency has an outstanding proposal to broaden the available means to meet the parking and emergency brake requirements for all trailers (40 FR 56920; December 5, 1975). However, because of the comprehensive nature of the proposed revision, it will not be acted on in the immediate future.

Until the broad proposal is made final or until another solution is available, the agency decided that the exclusion for these specialized trailers from the parking and emergency braking requirement should continue, as long as the vehicles are manufactured to comply with the BMCS requirements noted earlier. Accordingly, the agency proposed that the temporary exclusion contained in S5.6 and S5.8 of the standard be made permanent.

All comments received on the proposal supported continuation of the option. In the absence of a satisfactory solution to the underlying technical problems, the agency has decided to make final the changes as proposed.

In consideration of the foregoing, Standard No. 121 (49 CFR 571.121) is amended. . . .

The economic and inflationary impacts of this rulemaking have been evaluated in accordance with OMB Circular A–107, and an Economic Impact Statement is not required.

The agency finds that this amendment may become effective immediately, because the continuation of the option relieves a restriction.

The program official and lawyer principally responsible for the development of this amendment are Scott Shadle and Tad Herlihy, respectively.

(Sec. 103, 119, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.50.)

Issued on June 27, 1977.

Joan Claybrook
Administrator

42 FR 33293
June 30, 1977

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

(Docket No. 75–16; Notice 18)

This amendment suspends the school bus service brake stopping distance requirements of Standard No. 121, Air Brake Systems, which were scheduled for reimplementation April 1, 1978. This action is taken to preserve the status quo of the standard's applicability while more far-reaching issues of the air brake standard are resolved by the Department.

Dates: The amendment is effective March 23, 1978. Petitions for reconsideration must be received no later than April 24, 1978.

For further information contact:

Mr. Duane Perrin, Crash Avoidance Division, Office of Vehicle Safety Standards, 400 Seventh Street, SW., Washington, D.C. 20590 (202–426–2153).

Supplementary information: Standard No. 121 (49 CFR 571.121) regulates the braking system performance of air-braked trucks, buses, and trailers. The standard has been in effect for trailers since January 1, 1975, and for trucks and buses since March 1, 1975. Following implementation of the requirements for buses, a pattern of erratic behavior developed in the performance of the antilock system used by manufacturers of transit and intercity buses to satisfy the "no lockup" requirements of the standard (S5.3.1). The NHTSA suspended the service brake stopping distance requirement (including the "no lockup" requirement) for all buses to provide a period in which modified antilock hardware and newly-introduced systems could be field-evaluated (41 F.R. 1598; January 9, 1976). Several vehicle manufacturers and user groups argued that the suspension should be for a longer period and the suspension was extended from January 1, 1977, to September 1, 1977 (41 F.R. 52055; November 26, 1976), and subsequently to January 1, 1978 (42 F.R. 30188; June 13, 1977), with an additional 3-month delay for school buses.

The suspension of requirements for school buses is therefore scheduled to end April 1, 1978. While no school bus chassis or final-stage manufacturer has petitioned for further delay of the "no lockup" requirement, two petitions for the exclusion of school buses from this requirement have been submitted by the users of school buses. The National Association for Pupil Transportation petitioned for permanent exclusion of school buses on several grounds, including assertions about the unreliability, high costs, and difficulty of maintaining antilock systems.

A second petition was recently filed jointly by the Transportation Director's Association of the State of Georgia, the County Superintendents of the State of Georgia, and the State Specification Committee of the State of Georgia. This petition requests exclusion of school buses from the entire standard, although the arguments for exclusion relate mainly to antilock system difficulties.

Much of the information in both petitions appears to be based on experience with systems manufactured during the first months of the standard's implementation, and does not take into account improvements and other changes in circumstances since the bus service brake stopping distances were suspended in January 1976. Most notably, the extension of stopping distance requirements in March 1976 (41 F.R. 8783; March 1, 1976) permits most school buses to be certified to S5.3.1 of the standard without the installation of antilock systems. Current manufacturer plans are for antilock to be standard equipment on about 18 percent of all school buses after the scheduled reimplementation of service brake stopping distance requirements. Approximately 85 percent of these buses would have antilock only on the rear axle.

The Department has initiated a series of actions that are intended to resolve major concerns that have been raised with regard to the reliability,

effectiveness, and costs of the antilock systems generally used to meet the standard (42 F.R. 9626; March 9, 1978). Given this initiative, it appears inappropriate to change the status quo as it affects the manufacturer of vehicles not presently required to meet the stopping distance and "no lockup" requirements of S5.3.1. While there appears to be no independent basis in data or individual experience to indicate that the requirements should not be reimplemented for school buses at this point, manufacturers that otherwise support the standard have counseled maintenance of the status quo for school buses while the other more major issues are resolved. This point was made in December 1977 by Ford as a major supplier of school bus chassis and by Bendix, a manufacturer of antilock systems.

The NHTSA has therefore decided to temporarily postpone reimplementation of the service brake stopping distance requirements of Standard No. 121 as they apply to air-braked school buses. The NHTSA solicits comment on the reestablishment of these requirements at a certain date and on what that date should be. The Motor Vehicle and Schoolbus Safety Amendments of 1974 (Pub. L. 93–492, October 27, 1974) and mail regularly received by the agency make clear that the public and their legislators advocate strong regulation of the safety systems on school buses.

In accordance with Departmental procedures, the economic and other consequences of this rulemaking have been evaluated. As the rule maintains the status quo, it is not expected to have any new effects other than the inventory losses for the several school bus chassis manufacturers which do not also build trucks. These inventories could be utilized in response to purchase of antilock systems on an optional basis.

In an unrelated matter, the agency takes this opportunity to delete S3.1.2 and the reference to it in S3.1, because it was a temporary provision of the standard that is no longer effective.

Effective date finding: It is found that notice and public comment on this amendment are impracticable because of the extremely short time remaining before the requirement in question would otherwise become effective (April 1, 1978). Furthermore, it is found that the amendment may take effect sooner than 30 days following the date of its publication in the FEDERAL REGISTER because it relieves a restriction.

In consideration of the foregoing, Standard No. 121 (49 CFR 571.121) is amended as follows. . . .

The program official and lawyer principally responsible for this document are Duane Perrin and Tad Herlihy, respectively.

(Sec. 103, 119, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegations of authority at 49 CFR 1.50 and 501.8.)

Issued on March 20, 1978.

Howard Dugoff
Acting Administrator

43 F.R. 12015
March 23, 1978

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems

(Docket No. 75–16; Notice 21)

This notice fulfills the remand of the Ninth Circuit Court of Appeals in *PACCAR v. National Highway Traffic Safety Administration and Department of Transportation* with regard to modification of test procedures, which is the only aspect of the order not subject to further judicial review. Test procedures and conditions are specified for frictional characteristics of the test track surface, duration of time intervals between road tests, duration of permissible wheel lockup during road tests, and the amount of curving in the test track. The agency also makes final a long-standing proposal to modify the means for establishing the frictional resistance of the road test surface.

Dates: The amendment is effective August 25, 1978. Petitions for reconsideration must be received no later than October 5, 1978.

Address: Petitions for reconsideration should refer to the docket number and be submitted to: Docket Section, Room 5108, 400 Seventh Street, S.W., Washington, D.C. 20590.

For further information contact:

Tad Herlihy, Office of Chief Counsel; National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590 (202–426–9511).

Supplementary information: Standard No. 121 (49 CFR 571.121) regulates the braking system performance of air-braked trucks, buses, and trailers. The standard has been in effect for trailers since January 1, 1975, and for trucks and buses since March 1, 1975. Requirements are established for the service, emergency, and parking brake systems, including a requirement that the service brakes provide retardation, power and recovery capabilities. Road test procedures are set forth to advise manufacturers how the NHTSA will conduct its compliance tests of the manufacturers' products.

In January 1975, a truck manufacturer petitioned for judicial review of the standard's promulgation in accordance with § 105 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1394). The petitioner was subsequently joined by a trade association of truck users and a trade association representing the small manufacturers that complete trucks by mounting the bodies on incomplete truck chassis. The three actions were consolidated for argument in the Ninth Circuit U.S. Court of Appeals.

The Ninth Circuit recently entered its order on the petition for review and remanded the standard to the agency for further proceedings (573 F.2d 632). The Federal government has since petitioned for review of two aspects of that order in the Supreme Court. The purpose of this notice is to set forth the agency's actions in fulfillment of the third aspect of the remand, which was not a subject of the government's petition.

The court remanded several issues to the agency concerning the standard's test procedures, all of which are easily resolved by modifications in the standard's wording which do not affect the requirements for any person. The court stated that "the manufacturers are entitled to formal and reasonably specific testing criteria" in the area of frictional characteristics of the test track surface, duration of time intervals between repetitive road tests, duration of permissible wheel lockup during stopping distance tests, and the amount of curving in the test track.

Interpretation must be made of the court's remand on frictional characteristics of the test track. A first reading of the decision might suggest that a measurement technique (in the case, the "skid number" method of measuring road surface friction) may not be used in standards setting if it does not produce exact measurements. It is acknowledged that the skid number measurement has an accuracy tolerance, and that the tolerance can vary from measurement to measurement for a variety of reasons.

The agency does not believe the court intended this literal a reading, because no measurement can be exact as a matter of physical science. This exaggerated a reading of the decision would preclude all motor vehicle safety regulations, because all regulation involves measurement criteria and none is perfect. The agency's view is that the court objected only to reliance on a measurement technique that varies too widely in response to road surface conditions and that specified use of a no-longer-manufactured tire.

Because the tire specified is no longer manufactured, the NHTSA has already replaced the skid number measurement in all of its stopping distance standards other than 121. The only reason the technique was not replaced in Standard No. 121 was to comply with the Ninth Circuit's wish that the standard change as little as possible. (41 F.R. 24592; June 17, 1976). Now that review of the standard by the Ninth Circuit is complete, the agency can and does make final its longstanding proposal to use the new measuring technique. Comments received with regard to Standard No. 121 were discussed in conjunction with the June 1976 amendment.

The court also stated that the margin of variation in the measuring technique would not permit a manufacturer to conduct its tests by a means that ensured its vehicles would meet the requirement set forth in the standard. While the agency has always taken the position that an exact value (such as "skid number 75") is the clear and unambiguous way to state a legal requirement so that manufacturers are best on notice of what performance is required (e.g., 40 F.R. 47141; October 8, 1975), the agency can instead state a range of skid numbers in such a way that the manufacturer will be able to test to the exact skid number encountered in its testing, knowing that its vehicle has complied with the standard so long as the number used falls within the specified range. Essentially, the test procedure can be restated as a range (representing the anticipated tolerance in the new measuring method) in which the manufacturer has its choice of what skid number it uses. As long as this range includes the criterion specified in the past by the NHTSA and is already being met by manufacturers, it is no more stringent that the past requirement. Similarly, the other skid numbers from which manufacturers could choose would fall in the range of those that they have been using previously, but without the certainty that the chosen number will be the one by which their vehicles are measured. This approach recognizes the physical impossibility of finding any measuring technique which is exact, and the agency finds that it accurately fulfills the court's remand. The skid number ranges established are from 20 to 30 for the wet surface, and from 71 to 81 for the dry surface, to reflect the different values obtained when the new test tires are used. It is noted that this revised specification of skid numbers is no more severe a requirement than the single values previously referenced in the standard.

As for the remaining test conditions which the court questioned, the agency has monitored these conditions as a part of its compliance program and the development of its compliance test procedures. It is apparent that manufacturers, permitted to choose reasonable values for these aspects of the test protocol in the absence of criteria set forth in the standard, have chosen values that fall within an easily adoptable level. No manufacturer, for example, has chosen to test on other than a straight test track, which is sensible in view of the fact that a straight track offers the easiest means of staying within a 12-foot-wide-lane. Comparably, no antilock manufacturer has chosen other than reasonable "wheel lockup" times for its antilock systems because overly long lockups significantly and adversely reduce the stopping performance of the brakes on the controlled axle, which would sacrifice the other major characteristics of the vehicle being measured—that is, stopping distance. As for the interval between dynamic tests of the vehicle, the relevant factor is the relationship between the

time interval and brake temperature, because a short interval could result in an adverse effect on braking capabilities due to fade or other thermal effects. Therefore, the NHTSA hereby adopts a specification for initial brake temperature, which will in turn determine the interval between tests. A review of NHTSA compliance test results has shown that the performance of all complying vehicles tested to date has been within the requirements specified in this amendment. Adoption of these values therefore does not adversely affect any person subject to the standard, and they can be incorporated for the benefit of remand without the delay occasioned by notice and opportunity for comment.

The decision to revise the standard in this fashion has been evaluated in accordance with the requirements of Executive Order 12044 (43 F.R. 12660; March 24, 1978) and the corresponding review procedures within the Department of Transportation (43 F.R. 9582; March 8, 1978). It has been determined that this rulemaking is governed by short-term judicial considerations and that, despite its connection with Standard No. 121, does not qualify as a rulemaking that raises issues of cost or controversy necessitating the level of review and comment contemplated by the two directives.

Effective date: With regard to the establishment of a new test tire for pavement resistance measurement, because the older test tire is no longer manufactured, and because the amendment of the procedure and test tire is intended only to duplicate the existing procedure and tire, this amendment creates no additional requirements for any person, and an immediate effective date is found to be in the public interest.

With regard to the modification of test procedures and conditions not based on a proposal, the agency finds that they do not impose additional requirements on any person, and that delay of a proposal is unnecessary and would be contrary to the public interest in responding to the court's remand as expeditiously as possible.

In consideration of the foregoing, Standard No. 121 is amended. . . .

The program official and lawyer principally responsible for this document are Duane Perrin and Tad Herlihy, respectively.

(Sec. 103, 119, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.50.)

Issued on August 25, 1978.

Joan Claybrook
Administrator

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems

(Docket No. 75-16; Notice 24)

Action: Final rule and interpretation of court decision.

Summary: The U.S. Court of Appeals decision in *PACCAR v. National Highway Traffic Safety Administration and Department of Transportation* invalidated aspects of Standard No. 121, Air Brake Systems. This notice advises interested persons of the agency's interpretation of the *PACCAR* holdings, to guide continuing compliance with the standard. This notice also amends the standard as specified by the court to provide for "due care" certification.

Effective date: October 13, 1978.

For further information contact:

Tad Herlihy, Office of Chief Counsel, National Highway Traffic Safety Administration, 400 Seventh Street, B.W., Washington, D.C. 20590 202-426-9511.

Supplementary information:

Standard No. 121 (49 CFR 571.121) regulates the braking system performance of air-braked trucks, buses, and trailers. The standard has been in effect for trailers since January 1, 1975, and for trucks and buses since March 1, 1975. Requirements are established for the service, emergency, and parking brake systems of these vehicles. Truck braking systems are a particularly critical safety system, due to large variations between the unloaded and loaded weight conditions and the generally higher weight of trucks compared to other vehicles on the highway. Major requirements of the standard are that vehicles stop in specified distances and that the wheels not lock uncontrollably during these stops. The "no lockup" requirement ensures that skidding due to wheel lockup and loss of lateral stability is minimized.

In January 1975 a truck manufacturer petitioned for judicial review of the standard's promulgation in accordance with § 105 of the National Traffic and Motor Vehicle Safety Act (the Vehicle Safety Act) (15 U.S.C. § 1394) under which the standard was issued. Petitioner PACCAR was subsequently joined by a trade association of truck users and a trade association representing the small manufacturers that complete trucks by mounting a body of specialized equipment on incomplete truck chassis. The three cases were consolidated for argument in the Ninth Circuit U.S. Court of Appeals.

The court's decision was issued in April 1978 (573 F2d 632, 9th Cir. 1978, Cert. denied October 2, 1978), and the mandate making it effective was entered October 11, 1978. Certain aspects of the standard were invalidated, and the purpose of this notice is to set forth the agency's interpretation of the court's specified holdings to guide continuing compliance with the standard. One of the court's three holdings, that concerning test procedures and conditions, has already been responded to by the agency (43 FR 39390; September 5, 1978).

Invalidation of Certain Stopping Distances

While expressing support for requirements that "decreas[e] the disparity of stopping distances between ordinary automobiles and heavier vehicles" and maintain "vehicle stability and directional control," the court was concerned about the safety of "heavier axles" in combination with the antilock systems used generally to provide "no lockup" performance. The court was concerned that a malfunctioning antilock system would allow wheel lockup of more aggressive front axle brakes more often or sooner than had been the case with weaker brakes, resulting in loss of steering control. The court's emphasis on the combination of aggressive front axle brakes and antilock is clear in the opinion:

> As new components—strong front axles, new brake linings, and mini-computers to control wheel lock and skid—were mass-produced, and subsequently *put together in a unique combination,* grave problems developed (emphasis supplied) 573 F2d at 641.

In referring to "heavier axles", the court was describing the brake retardation levels supplied by manufacturers to obtain the 258-foot (and subsequent 277-foot) 60-mph stopping distances specified by the standard prior to February 26, 1976. The 60-mph stopping distances were extended to 293 feet on that date (41 FR 8783; March 1, 1976) and have resulted in significant reduction in retardation force levels. The court did not take this change into account, because the Record filed with the court and the July 1976 oral argument contained no information about the performance of the vehicles built after February 26th to conform to the 293-foot distance. The agency received no petitions for reconsideration of the brake force levels established by the March 1976 notice.

The court held, with regard to stopping distances,

> . . . those parts of the Standard requiring heavier axles and the antilock device should be suspended. The evidence indicates that this can be accomplished if we hold, as we do, that the stopping distance requirements from 60 mph are invalid . . . We hold only that more probative and convincing data evidencing the reliability and safety of vehicles that are equipped with antilock and in use must be available before the agency can enforce a standard requiring its installation. 573 F2d at 643.

These two statements of the holding differ from one another, the first specifying both "heavier axles" and "the antilock device" for invalidation, while the second only specifies antilock. The text of the opinion (located at footnote 26) indicates that the court actually equates "stopping distance" with "the antilock requirement." The agency concludes that the court intended to invalidate "the stopping distance requirements from 60 mph" only insofar as a combination of high retardation force levels and a malfunctioning antilock would cause stability problems beyond those in vehicles built before the standard's effective date. At the same time the court was clear that the "no lockup" requirements were invalidated for both trucks and trailers.

It is therefore the agency's view that the "no lockup" portions of S5.3.1 and S5.3.2 insofar as they apply to trucks and trailers are invalid, along with the related stopping distances of 293 feet for service brake capability and 613 for emergency brake capability (720 for truck-tractors in the unloaded condition) established for 60-mph loaded and unloaded stopping tests under S5.3.1 and S5.7 for trucks. For those trucks with a speed attainable in 2 miles of less than 60 mph, the agency believes that the "top speed" stopping distance specified by S5.3.1.1 for both service brake and emergency brake stopping tests are invalid.

The agency does not believe that any requirements of Standard No. 121 are invalidated for buses because of the court's statement in footnote 1 that "[t]he part of the Standard that regulates air-braked buses is not at issue here." It is clear that the court was aware of the experience of buses built to conform to the standard, as evidenced by the court's reliance on statements by bus operators (footnote 43) and discussion of the rulemaking history for buses (text following footnote 25). The court's explicit removal of bus requirements from its consideration seems a clear intent to limit the ambit of its decision to trucks and trailers.

The agency concludes that only the actual stopping distances from 60-mph (or top speed) are invalidated and not other requirements that bear on performance of the vehicle. This understanding of the court decision fulfills the court holding cited above, while it does not disturb braking characteristics which do not present potential adverse handling characteristics. Thus, the stopping test sequence in which the truck or trailer must remain within a 12-foot lane from 60 mph (or top speed) is not invalid, while the requirement to stop within a specified distance is invalid.

The dynamometer requirements of S5.4 for trucks and trailers also were not affected by the court's holding. It does appear that the requirement for 90 p.s.i. air pressure in the trailer control line during the stop constitutes a portion of the "no lockup" requirement and is therefore invalidated by the court. Collateral requirements such as air reservoir volume that may be indirectly based on "no lockup" performance are not affected by the court decision.

A secondary reason to conclude that the testing from 60 mph remains in the test sequence is that manufacturers must continue to certify compliance with 20-mph stops and x parking brake test following certain 60-mph stops. The 60-mph stops affect the brake linings and could affect results of other portions of the testing if they are dropped from the test sequence.

With regard to the invalidated portions of the standard, the agency expects to publish a *Federal Register* notice shortly that sets forth its plans.

"Due Care" Certification

The court expressed concern about the certification responsibilities of the "final stage" manufacturers that mount the body or specialized equipment on mass-produced truck chassis built by other manufacturers. Section 114 of the Vehicle Safety Act (15 U.S.C. § 1403) specifies that the manufacturer or distributor of a motor vehicle shall certify that its product conforms to all applicable Federal motor vehicle safety standards. The agency has issued regulations that divide the responsibility for certification of "multistage" vehicles among the "incomplete vehicle manufacturers" of the chassis, any "intermediate stage" manufacturer involved, and the "final stage" manufacturer that completes the vehicle (49 CFR Parts 567, 568).

Standard No. 121 sets forth performance requirements that air-braked vehicles must conform to, and further sets forth the testing conditions under which the performance must be met (paragraph S6, *Conditions*). The requirements include a specification that certain stopping and wheel control capabilities be available under certain conditions, including stops from 60-mph and 20-mph in the unloaded and loaded conditions. The standard does not require that manufacturers subject their vehicles to these stops. It is accepted that the smaller final-stage manufacturers may not in all cases have the resources and capabilities to conduct such testing. The agency has regularly stated that a manufacturer may meet its statutory certification requirements either through demonstration of the specified stops or by any other chosen means that fulfills the related statutory requirement that a manufacturer must exercise "due care" in certification (15 U.S.C. § 1397(b)(2)). The agency has not stated to any final-stage manufacturer what its "due care" responsibility might consist of, in recognition of the reality that "due care" is essentially a judicial concept that is determined on a case-by-case basis in light of the factual situation facing the particular manufacturer at the time of certification. Because the engineering and financial resources available to a particular manufacturer are not fixed, what constitutes "due care" would vary among manufacturers, and even vary from day-to-day for the same manufacturer, making such a statement by the agency impracticable.

The court was sympathetic to the situation of the smaller final-stage manufacturer in holding that—

> . . . Since NHTSA has admitted that road testing is beyond the practical and financial reach of the final stage manufacturers, it must propose some alternative method for those manufacturers which, if followed, it will recognize as fulfilling the due care requirement. 573 F2d at 645.

Fortunately, an alternative to road testing does exist that would constitute "due care" in certification by any final-stage manufacturer that adopted it, whatever its resources and engineering expertise. Parts 567 and 568 obligate the incomplete vehicle manufacturer to provide a basis for complete certification (the "incomplete vehicle document") with each vehicle, which can be used for certification as long as the final-stage manufacturer does not violate an "envelope" of conditions listed in the document as the reasonable limits to which the incomplete vehicle manufacturer has already tested. A final-stage manufacturer can avoid any road testing simply by a "pass through" of this incomplete vehicle document. Of course, it would be a logical impossibility for the agency to specify what constitutes "due care" for the infinite number of configurations that exceed the "envelope" of conditions in advance of the manufacturer's decision to do so.

The problem, as noted by the court, is that the final-stage manufacturer only had assurances from the agency in the past that conformity to the incomplete vehicle document would constitute the exercise of due care in complying with Standard No. 121. What is required by the court's holding, in the agency's view, is the modification of Standard No. 121 itself to state a certification of compliance based on adherence to the incomplete vehicle document would constitute the exercise of due care. This is accomplished by this notice.

It is recognized that trailers and buses other than school buses are typically manufactured in one stage and this alternative method is unavailable to these vehicles. However, the court's holding discusses only the obligations of final-stage manufacturers that, by definition, only exist in the case of multistage manufacture.

In accordance with Department of Transportation policy for the analysis of regulatory actions, it is found that the amendment concerning due care does not constitute a significant regulation that requires regulatory analysis. Evaluation of the

change indicates that it will have no economic effects other than a potential reduction of certification costs for some final-stage manufacturers.

Findings. Because the amendment constitutes an alternative method of compliance and creates additional requirements for no person, it is found for good cause shown that notice and opportunity for comment are unnecessary and that an effective date sooner than 30 days from the date of publication is in the public interest. The court's holding with regard to "no lockup" and stopping distances take effect independently of administrative action by the agency.

In consideration of the foregoing, paragraph S6 of Standard No. 121 (49 CFR 571.121) is amended by the addition of a sentence at the end of the text to read as follows:

"Compliance of vehicles manufactured in two or more stages may, at the option of the final-stage manufacturer, be demonstrated to comply with this standard by adherence to the instructions of the incomplete vehicle manufacturer and any intermediate-stage manufacturer provided with the vehicle in accordance with § 568.4(a)(7)(ii) and § 568.5 of Title 49, Code of Federal Regulations."

The program official and lawyer principally responsible for the development of this document are Duane Perrin and Tad Herlihy, respectively.

Issued on October 13, 1978.

Joan Claybrook
Administrator
43 F.R. 48646
October 19, 1978

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems

(Docket No. 75-16; Notice 25)

Action: Final rule.

Summary: This notice amends the air brake standard to further extend existing exclusions for heavy hauler trailers, auto transporters, and other specialized vehicles from certain requirements and withdraws two recent changes in road test procedures. These actions follow judicial review of the standard, and are intended to provide direction with regard to the future of the air brake standard.

Dates: Effective date of amendments is December 18, 1978.

Addresses: Petitions for reconsideration should refer to the docket number and be submitted to: Room 5108, Nassif Building, 400 Seventh Street, S.W., Washington, D.C. 20590.

For Further Information Contact:

Mr. Duane Perrin, Office of Vehicle Safety Standards, National Highway Traffic Safety Administration, Washington, D.C. 20590 (202) 426-2153.

Supplementary Information: Standard No. 121, Air Brake Systems (49 CFR 571.121); regulates the braking system performance of air-braked trucks, buses, and trailers. The standard has been in effect for trailers since January 1, 1975, and for trucks and buses since March 1, 1975. Requirements are established for the service, emergency, and parking brake systems of these vehicles.

Test Procedures

Certain aspects of the air brake standard were invalidated by court action in *PACCAR v. National Highway Traffic Safety Administration and Department of Transportation,* 573 F2d. 632 (9th Cir. 1978), *cert.* denied _____ U.S. _____ (October 2, 1978) (47 U.S.L.W. 3190 (Sup. Ct.)) as detailed in a recent agency notice (43 FR 48646; October 19, 1978). The agency fulfilled the court's remand with regard to modification of test procedures on August 25, 1978 (43 FR 39390; September 5, 1978), by means of several amendments. Notice and opportunity for comment were not provided, because the NHTSA judged that the modifications would not involve additional requirements for any person and reinstitution of the test procedures was found to be in the public interest. However, six petitions for reconsideration of some of the modifications have been filed by parties that argued the changes may or do in fact cause some changes in the standard's requirements.

In response to the court's order for a specific criterion for the interval between repetitive tests, the standard was amended to specify initial brake temperatures prior to the tests. Brake temperatures are partly a function of the time that brakes have to cool between tests.

Freightliner Corporation objected to the specification of a 150° to 200°F. initial brake temperature for stopping tests as the agency's method of establishing the test intervals. Freightliner explained that some of its brake designs could not provide the required 60-mph stopping distances if initial brake temperatures were above 180°F. The other commenters, in contrast, pointed out that metallic linings and disc brake technology argued for a higher initial brake temperature in some cases. The American Trucking Associations (ATA) suggested specification of a time period between repetitive tests as a means of fulfilling the court remand for test intervals.

In view of these possible substantive changes represented by the specification of an interval between repetitive road tests, the agency concludes that the wisest course of action would be to revoke the initial brake temperature specification and propose a new method, following consideration of the data and suggestions supplied by manufacturers. Withdrawal of the test interval specification is accomplished in this notice.

All petitioners requested that the modification of skid number specification be reconsidered. The agency met the court's objection to specification of a single value for the "skid resistance" characteristics of the test track by substitution of a range of permissible values. Commenters differed significantly with the agency both over the meaning of the court's opinion and the consequence of the modification adopted by NHTSA. Although the NHTSA does not believe that its modification had a substantive effect on the requirements of the standard, it is clear that there is a difference of opinion about the court's holding, and the NHTSA again considers the wisest course of action to be revocation of the skid number range to permit a proposal and opportunity for comment. The substitution of the updated and uncontroversial ASTM test method and tire is not revoked.

No other aspect of the test procedure modifications was cited by commenters as a source of specific concern.

As for the period of time that the skid number range and initial brake temperature requirements were in effect (from August 25th to the date of publication of this notice), the agency hereby states that it will not pursue cases that arose as a consequence of these requirements during the short period that they were effective.

Vehicle Exclusions

Auto transporters and heavy hauler trailers have been excluded from Standard No. 121 until January 1, 1979, due to the distinctive construction or use of these vehicles that make compliance with certain aspects of the standard more difficult. Four years of additional time were granted to manufacturers of these vehicles in order for them to work out solutions to their distinctive equipment problems. The Truck Trailer Manufacturers Association (TTMA) recently petitioned the NHTSA for permanent exclusion of heavy hauler trailers from the standard, based on hardware problems and related reasons.

The NHTSA proposed some continued exclusions for these and related vehicle types (43 FR 41056; September 14, 1978). The nature of the proposed exclusions was based on equipment space considerations, rough terrain use of some of the vehicles, and most importantly, on the uncertainty over future road testing requirements created by pendency of the Ninth Circuit litigation. It was accordingly proposed that heavy hauler trailers and auto transporters be temporarily excluded from stopping distance requirements, including the "no lockup" and related reservoir size requirements. Also, heavy haulers, pulpwood trailers, and straddle trailers would be permitted the same option as agriculture trailers and converter dollies have to meet only the emergency breakaway requirements and no parking brake requirements.

The proposed temporary exclusions from the road test and reservoir volume requirements were supported by Freightliner and General Motors, manufacturers of tractors for auto transporter use, and by Delavan Industries, Inc., an auto transporter manufacturer. The California Highway Patrol (CHP) and Wagner Electric Co., a brake component manufacturer, expressed concern that the exclusions not be made permanent, and that these vehicles eventually be required to exhibit the same performance as other air-braked trucks and trailers. No date for compliance was suggested. TTMA requested a review of the reservoir volume requirements for all vehicles in light of the *PACCAR* decision, and suggested a reduced volume requirement for trailers. No other comments on these subjects were received.

This amendment makes final the temporary exclusions from road test and reservoir volume requirements for heavy hauler trailers and auto transporters. No termination date for the exclusions was proposed or is made in the final rule, but manufacturers of these vehicles must be and are hereby placed on notice that these exclusions are not made as permanent exclusions. The temporary exclusions will therefore remain in effect until a final decision is made regarding the reservoir volume and stopping distance requirements for all vehicles. Notice and opportunity for comment will precede any amendment of the reservoir volume and stopping distance requirements.

The CHP requested rewording of the exclusion of auto transporter tractors from the road test requirement in S5.7.1, to avoid confusion over the reference to such requirements in S5.7.3. The wording is changed to expand the exclusion to both S5.7.1 and S5.7.3.

The proposed permanent exclusion from the parking brake requirements for heavy hauler trailers was supported by TTMA and Fontaine Truck Equipment Co., a heavy hauler trailer manufacturer. The CHP expressed the desire that the exclusion be only temporary, and be reviewed

in the future when more compact parking brake designs are available. The National Automobile Transporters Association (NATA), and two auto transporter manufacturers, Delavan and Cottrell-Sullivan, requested permanent exclusion from the parking brake requirement for auto transporter trailers as well. Reasons cited were the problems of mounting the parking brake components and the associated air reservoirs without loss of cargo-carrying capacity, lack of availability of more compact hardware, and the short lead time to redesign equipment by January 1, 1979. NATA also noted that auto transporters usually operate as married units, and have a good safety record. Another manufacturer, Traffic Transport Engineering, requested permanent exclusion from the entire standard, based on the same arguments.

The NHTSA is aware that auto transporter manufacturers are presented with difficult hardware packaging problems related to parking brakes on trailers, but is also aware that prototype auto transporters have been built to full compliance with the standard about two years ago. This constitutes strong evidence that such systems can be built on a production basis, and the agency takes note that manufacturers of auto transporters have had four years longer to solve their hardware problems than manufacturers of other types of trailers.

Nevertheless, the agency also recognizes that the availability of new, more compact parking brake systems is dependent on the proposed changes in the parking and emergency brake requirements, which have not yet been implemented. Some additional delay of applicability of the parking brake requirement for auto transporters therefore appears reasonable. An additional delay of one year is provided, with the expectation that any changes in the parking brake requirements will be made final by early 1979, allowing sufficient lead time for manufacturers to incorporate such changes in their trailers. Requests for permanent exclusion from the parking brake requirements or the entire standard for auto transporters are denied, on the grounds that it has been demonstrated that complying vehicles can be designed without significant loss of cargo carrying capacity, and that the additional year's exclusion should compensate for any lead time difficulties. Unlike heavy hauler trailers, auto transporter trailers are not subjected to the same off-road environment that formed the basis for excluding certain vehicle types from the parking brake requirement. The proposed parking brake exclusion of heavy hauler and other trailers is adopted as proposed.

TTMA and three of its members—Birmingham Manufacturing Co., Ferree Trailer Corp., and Fontaine Truck Equipment Co.—repeated their requests for permanent exclusion from the entire standard for heavy hauler trailers, and expressed dismay that all of the points raised in their petition for exclusion had not been addressed in the preamble to the agency's proposal. The NHTSA regrets the brevity of its treatment of the issues in the proposal, but it should not be interpreted as a lack of attention or concern for the problems of the heavy hauler industry. A detailed discussion of the petition and comments to the proposal is being prepared. Copies will be sent to the TTMA and parties who commented on the proposal, and placed in the public docket. Because of its length and technical nature, it is only summarized here.

To place the subject in perspective, it is necessary to first see what portions of the standard apply to heavy hauler trailers. Section S5.1 and S5.7 of the standard apply only to trucks and buses. By this notice, heavy hauler trailers have been permanently excluded from S5.6, and temporarily excluded from S5.3 and parts of S5.2. Section S5.5 applies only if the trailer is antilock-equipped, which is not required according to the Ninth Circuit decision. To the NHTSA's knowledge all heavy hauler trailers already are complying with the applicable portions of S5.2 and S5.8, because of industry standards or BMCS requirements. Thus the only remaining requirements that could necessitate any change in the vehicles are the dynamometer requirements of S5.4.

The assertion that is presented in the TTMA petition, and repeated in the comments to the proposal, is that compliance with Standard No. 121 will necessitate the addition of more axles, resulting in substantially increased cost. This possibility arises because of the current method of rating the capacity of heavy hauler trailers. Axle weight ratings (GAWR's) depend upon the load-carrying capacity of the axle, rims, and tires, and the torque capability of the brakes on the axle. According to industry standards, tires can be rated for higher loads if speed is restricted. Current practice is to rate heavy hauler trailers according to the capacity of the axles and tires, using the tire load capacity ratings at 20 mph. The brakes used

are currently not considered in axle rating calculations for the restricted speed rating.

For a trailer subject to Standard No. 121, however, the dynamometer requirements of S5.4.1 require that the brake retardation capability be proportional to the GAWR's. If the retardation capability of the brakes on a trailer is insufficient to meet the minimum performance requirement, a manufacturer must either install more powerful brakes or "derate" the axles to bring the GAWR's in line with the braking capability afforded. In the case of heavy hauler trailers, manufacturers say that they are already using the most powerful brakes available for 15-inch wheels, and those brakes are rated at only 17,000 pounds per axle. The manufacturers assert that since nearly all heavy hauler trailer axles are currently rated for a higher load, the derating to 17,000 pounds per axle necessitated by consideration of brakes in the rating calculations would require them to add more axles to provide the same overall capacities for their trailers.

The data supplied, however, do not support this view. The dynamometer tests are run at 50 mph, and therefore the 17,000-pound axle rating for brakes is a factor in determining the GAWR at that speed. Examination of the load ratings of the tires typically used on heavy hauler trailers (8.25 x 15 and 9.00 x 15) show that their ratings at 50 mph are below 17,000 pounds per axle. Therefore, the tires are the limiting element in determination of GAWR at 50 mph, and the brakes currently being used on these trailers already comply with the dynamometer requirements of the standard with the tires employed.

The misunderstanding apparently arises from the current practice of rating heavy hauler trailers at 20 mph. It is noted that while § 567.4(h)(3) of NHTSA certification regulations (49 CFR Part 567) allows manufacturers to specify GVWR-GAWR ratings for operation of a vehicle at restricted speeds in addition to the unrestricted ratings, the GAWR used for determination of compliance with the dynamometer requirements must be that corresponding to a speed not less than the dynamometer test speed (50 mph). Testing at the restricted speed GAWR would represent an overloaded condition at the dynamometer test speed. The portion of the dynamometer test conditions dealing with GAWR (S6.2.1) is hereby amended to clarify this fact. The only trailers that would actually have to be derated (at 50 mph) would be those using 10.00 x 15 or 11.00 x 15 tires. Very large heavy hauler trailers (over 50 ton capacity) are not affected because they are already permanently excluded by virtue of having a gross vehicle weight rating over 120,000 pounds.

In view of the longer than anticipated time for response to the TTMA petition and the short time remaining before the existing January 1979 effective date, the NHTSA has decided to and hereby delays the effective date for institution of the dynamometer requirements for heavy hauler trailers to July 1, 1979, as requested by TTMA.

CHP suggested changing the word "agriculture" to "agricultural" in the definition of a commodity trailer, and deletion of the phrase "an arrangement of air control lines and reservoirs that minimizes damage in field operation" because it is vague. Midland-Ross commented that straddle trailers would be included in the agricultural commodity trailer definition, and that a separate definition is unnecessary. CHP suggested that the term "logging trailer" be used instead of "pulpwood trailer", and that the definition be reworded to be similar to the definition of agricultural commodity trailer. CHP also suggested deleting the reference to hydraulic lifting arms in the case of straddle trailers, because it is too design restrictive. The NHTSA agrees with the spirit of these suggestions but, in the interests of preserving continuity in interpretation of existing terminology, the changes are only made where they do not conflict with wording already in the standard or in previous interpretations of it.

It is noted that the comments on the parking and emergency brake aspects of the September 14th notice have convinced the NHTSA that further consideration should precede rulemaking changes in this area.

In accordance with Department of Transportation policy for the analysis of regulatory actions, it is found that these amendments of Standard No. 121 do not have significant impact as defined in the Department's criteria for internal review. The changes all permit greater manufacturing flexibility and do not impose any additional requirements. The implementation of some of the standard's requirements for heavy hauler trailers and auto transporters reflects the termination of an exclusion, not new agency action. It is also found that no significant adverse environmental impact will result from these amendments.

In consideration of the foregoing, Standard No. 121 (49 CFR 571.121) is amended . . . .

Effective date finding: Due to the short time remaining before vehicles would have to be modified to comply with the established January 1979 requirements, it is found that notice and opportunity for comment on the delay of the dynamometer requirements for heavy hauler trailers to July 1, 1979, and the parking brake requirements for auto transporter trailers to January 1, 1980, is impracticable and contrary to the public interest in establishing the final requirements as early as practicable. For the same reason, it is found to be in the public interest to make the relieving amendments effective immediately.

The program official and lawyer principally responsible for the development of this document are Duane Perrin and Tad Herlihy, respectively.

Issued on: December 11, 1978.

Joan Claybrook
Administrator

43 F.R. 58820
December 18, 1978

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems—Interpretative Amendment

(Docket No. 75–16; Notice 26)

Action: Final rule.

Summary: This notice amends the language of Air Brake Standard 121 to reflect the U.S. Court of Appeals decision in *PACCAR* v. *National Highway Traffic Safety Administration and Department of Transportation.* This action is intended to clear up any confusion about the effect of the court's decision on portions of the standard.

Effective date: August 9, 1979.

For further information contact:

Roger Tilton, Office of Chief Counsel, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. (202–426–9511).

Supplementary information: Standard No. 121 (49 CFR 571.121) regulates the braking system performance of air-braked trucks, buses, and trailers. The standard has been in effect since January 1975 for trailers and March 1975 for trucks and buses. Petitions for judicial review of the standard were filed and resulted in invalidation of three aspects of the air brake regulation (see *PACCAR* v. *NHTSA and DOT*, 573 F.2d 632, Cir. 1978, cert denied, October 2, 1978). The agency explained its interpretation of the court's action in three *Federal Register* notices (43 FR 39390, September 5, 1978; 43 FR 48646, October 19, 1978; 43 FR 58820, December 18, 1978) and in several meetings held with equipment and vehicle manufacturers and air-brake vehicle users.

It has become apparent that some confusion exists with regard to the agency's interpretation of the combined effect of two aspects of the court's decision. The first is the agency's view that the court invalidated the "no lockup" portions of S5.3.1 and S5.3.2 insofar as they apply to trucks and trailers, along with the related stopping distances of 293 feet for service brake capability and 613 feet for emergency brake capability (720 for truck-tractors in the unloaded condition) established for 60-mph loaded and unloaded stopping tests under S5.3.1 and S5.7 for trucks. The second is the agency's view that the court invalidated the "skid number" measurement technique of test surface frictional characteristics for use in measuring whether trucks meet the strict stopping distance requirements of the standard. The Court found that while the "skid number" of a surface is an objective measurement, it is not a practicable test method for manufacturers since normal fluctuations for a given road surface would require manufactures to overcompensate by testing their vehicles on road surfaces substantially slicker than the regulation requires. The agency acted to correct the skid number variability problem and measurement technique but subsequently withdrew the correction as it related to skid number variability because of disagreement both over the meaning of the court's opinion and the consequences of the modification adopted (43 FR 58820; December 18, 1978).

Several references by the agency to the fact that the court did not invalidate stopping distance requirements other than the 60-mph stops for trucks have apparently been taken to mean that the agency is in a position to enforce compliance with all remaining stopping distances. The fact that the standard's stopping distances remain completely valid for buses may contribute to this view. In fact, the court's remand to the agency of the skid number specification and duration of time interval between repetitive road

tests effectively precludes the agency from enforcing compliance with any road test requirement for trucks and trailers at any speed on wet or dry surfaces. It is apparent that amendment of the language of the standard to reflect the court's actions would be beneficial to end any confusion that may exist. The purpose of this notice is to make that amendment.

It is noted that this action has no effect on the requirements for buses, or on the application and release timing, dynamometer, or parking brake requirements for all vehicles. For this reason, the NHTSA is not amending the test procedures which are applicable to vehicles or requirements other than those addressed by the court.

The agency is amending the application section of the standard to state that trucks and trailers need not comply with certain paragraphs of the regulation. The regulation is being amended in this manner rather than deleting or revising the wording of each of the affected sections in order to disturb the actual text of the standard as little as possible. In that way, the affected sections can most easily be reinstated when suitable solutions to the requirements laid down by the Court are found. In addition, by retaining the standard's language in its existing form, manufacturers are made aware of what the agency still considers to be reasonable standards for minimum acceptable performance, and those manufacturers that wish to construct their vehicles in accordance with the non-mandatory sections of the standard will have the necessary guidance to do so. The agency also has taken this opportunity to delete from S3 references to temporary exclusions which have expired.

Effective date finding: The agency is issuing an interpretative amendment that merely conforms that standard's language to its meaning following the remand by the Ninth Circuit, and therefore the amendment does not change the standard in any respect. Accordingly, it is found for good cause shown that notice and opportunity for comment are unnecessary and that an effective date for the amendments sooner than 30 days from the date of publication in the *Federal Register* is justified.

In consideration of the foregoing, Standard No. 121 (49 CFR 571.121) is amended by replacing the last paragraph of S3 with the following paragraph:

Notwithstanding any language to the contrary, sections S5.3.1, S5.3.1.1, S5.3.2, S5.3.2.1, S5.3.2.2, S5.7.1 and S5.7.3 of this standard are not applicable to trucks and trailers.

The program official and lawyer principally responsible for the development of this document are Duane Perrin and Roger Tilton, respectively.

Issued on: August 3, 1979.

Joan Claybrook
Administrator

44 F.R. 46849
August 9, 1979

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems—Parking Brakes

(Docket No. 75–16; Notice 27)

Action: Final rule.

Summary: This notice amends the air brake standard to expand the latitude which a vehicle manufacturer has in selecting means to comply with the parking brake requirements. The amendment makes final one of several changes to the parking and emergency brake requirements that had been proposed previously. The other proposed changes have been reexamined in light of comments to the proposal and to a separate proposal outlining plans for replacement of FMVSS 121 by a new standard. . The NHTSA has decided to suspend rulemaking action on those items until research results and other further information is available.

Effective date: August 9, 1979.

For further information contact:

Mr. Duane Perrin, Office of Crash Avoidance, National Highway Traffic Safety Administration, Washington, D.C., 20590 (202–426–2153).

Supplementary information: Standard No. 121 (49 CFR 571.121) regulates the braking system performance of air-braked trucks, buses, and trailers. The standard has been in effect for trailers since January 1, 1975, and for trucks and buses since March 1, 1975. The standard contains requirements for service brake systems, emergency brake systems, and parking brake systems.

More than four years' experience with the standard on the part of manufacturers, users, the agency, and other interested parties indicate a possibility that some of the emergency and parking brake performance requirements could be more broadly stated to allow new design options that offer a level of safety equivalent to that offered by existing designs. On September 14, 1978, the NHTSA issued a notice of proposed rulemaking (43 FR 41056) that would have substantially revised the parking brake requirements for all vehicles and the emergency brake requirements for trailers. Subsequent to the issuance of that proposal, a mandate was issued by the U.S. Court of Appeals for the Ninth Circuit, invalidating certain aspects of FMVSS 121 (43 FR 48646, October 19, 1978). In light of the court decision, the NHTSA has tentatively decided to issue a new heavy duty vehicle brake standard, FMVSS 130, which will eventually replace FMVSS 121. An Advance Notice of Proposed Rulemaking (ANPRM) on Standard No. 130 was issued in February (44 FR 9783, February 15, 1979).

Responses to the ANPRM on Standard No. 130 underscored the need for stability in the industry. To achieve stability, commenters suggested avoiding unnecessary changes in Standard No. 121, which remains in effect until FMVSS 130 is issued. In addition, commenters on the September notice pointed out areas where some of the proposed changes need further research and consideration. For these reasons, most of the changes to the parking and emergency brake sections of Standard No. 121 that were proposed in September are being tentatively put aside. Some of the changes proposed in the September notice may be raised again in the new proposal for Standard No. 130, after further information is obtained by the agency.

The NHTSA has determined, however, that one of the proposed changes should not be delayed until rulemaking is completed on FMVSS 130. That change allows the application of parking brakes by means of service brake air, as long

as the application can be made when a failure exists in the service brake system, and as long as the parking brake is held in the applied position by mechanical means. The standard previously required parking brakes to be applied by a separate energy source, and this change allows an alternative to the spring-applied parking brake systems now used. The alternative systems could be less costly and have essentially the same performance as current systems. In addition, the change allows more compact systems to be produced for vehicles such as auto transporters where space for mounting of components is at a premium.

The changes to the parking brake application requirements proposed in September (Docket No. 75–16; Notice 22) were opposed by the California Highway Patrol (CHP), on the assumption that a diaphragm inside a brake chamber is considered part of the brake chamber housing, and that the proposal would have allowed a reduction in safety over current systems. Previous interpretations, however, have clarified that a brake chamber housing is only the outer body of the chamber and does not include the diaphragm. Thus, the prescribed performance must be achieved with any type of failure in the service brake system, including a ruptured diaphragm. The NHTSA concludes, therefore, that this interpretation satisfies the concerns of the CHP. The CHP also suggested a slight rewording to indicate that the required force is applied at the drawbar and not in the parking brake itself. The wording has been changed somewhat to clarify that point.

The American Trucking Associations (ATA) and Transquip Industries objected to the proposal because it would require a second reservoir on an air-applied parking brake system in order for the parking brakes to be applied in the event of a failure of the service reservoir. The NHTSA understands that the use of only one reservoir would reduce cost. However, it would also offer a significant reduction in performance as compared to present systems, because certain service brake system failures could occur for which there would be no secondary means of braking the vehicle. Accordingly, the NHTSA concludes that ATA and Transquip Industries' objections do not warrant any change in the amendment.

Traffic Transport Engineering, an auto transporter manufacturer, requested clarification of whether two relay valves would be required in an air-applied system, since the parking brakes would have to be capable of application with any single failure, and the relay valve could fail. Since relay valve failures are relatively common, the NHTSA considers it necessary to preserve the performance achieved by present systems. Currently, the failure of a relay valve would not prevent emergency application of the trailer brakes. Thus, if a manufacturer chooses to equip a trailer with air-applied parking brakes, he would have to devise a means of achieving a brake application in case of failure of the service brake relay valve. That could be accomplished by using a second relay valve and reservoir.

The Dolphin Brake Corporation asked for clarification of the proposed wording to deterbine whether or not their parking brake that applies by means of hydraulic fluid would meet the requirements. The NHTSA believes that the wording is sufficiently clear to indicate that, like an air-applied system, such a brake would only meet the requirements if a mechanical means of holding the application in the event of loss of fluid pressure were incorporated.

In order to minimize changes to FMVSS 121, the amended wording for application and holding will remain in one paragraph, S5.6.3, as currently in the standard.

Since this amendment relieves a restriction it is being made effective immediately.

In consideration of the foregoing, the first sentence of paragraph S5.6.3 of Standard No. 121 (49 CFR 571.121) is amended . . . .

The principal authors of this notice are Duane Perrin of the Office of Crash Avoidance and Roger Tilton of the Office of Chief Counsel.

Issued on August 6, 1979.

Joan Claybrook
Administrator

44 F.R. 46850
August 9, 1979

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems

(Docket No. 75–16; Notice 28)

Action: Correction.

Summary: On August 9, 1979, the NHTSA published in the *Federal Register* a final rule amending the applicability section (S3) of Standard No. 121, *Air Brake Systems.* That notice, which added a sentence to the end of S3, contained an error in its reference to section S5.7.3. The notice appears to show that the entire section of S5.7.3 no longer applies to trucks and trailers, when the agency intended only for subparagraphs (a) and (b) to be inapplicable to trucks and trailers. These vehicles do have to comply with S5.7.3(c). Accordingly, the August 9 notice is corrected by changing the last sentence of section S3 to read: Notwithstanding any language to the contrary, sections S5.3.1, S5.3.1.1, S5.3.2, S5.3.2.2, S5.7.1, S5.7.3(a) and S5.7.3(b) of this standard are not applicable to trucks and trailers.

Effective date: September 13, 1979.

For further information contact:

Mr. Scott Shadle, Office of Crash Avoidance, National Highway Traffic Safety Administration, Washington, D.C. 20590 (202–426–2153).

Issued on September 4, 1979.

Michael M. Finkelstein
Associate Administrator for Rulemaking

44 F.R. 53166
September 13, 1979

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems—Correction

(Docket No. 75–16; Notice 29)

Action: Final rule; correction.

Summary: On August 9, 1979, the NHTSA published in the *Federal Register* a final rule amending the applicability section (S3) of Standard No. 121, *Air Brake Systems.* On September 13, the agency published a correction of that final rule. An error was made in the September 13, correction when reference to section S5.3.2.1 was inadvertently deleted from the notice. . Accordingly, the final rule is corrected by changing the last sentence of section S3 to read: Notwithstanding any language to the contrary, §§ 5.3.1, 5.3.1.1, 5.3.2, 5.3.2.1, 5.3.2.2, 5.7.1, 5.7.3(a) and 5.7.3(b) of this standard are not applicable to trucks and trailers.

Effective date: October 1, 1979.

For further information contact:

Mr. Scott Shadle, Office of Crash Avoidance, National Highway Traffic Safety Administration, Washington, D.C. 20590 (202–426–2153).

Issued on September 25, 1979.

Michael M. Finkelstein
Associate Administrator for Rulemaking

44 F.R. 57100
October 4, 1979

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems
(Docket No. 79-03; Notice 4)

ACTION: Final rule.

SUMMARY: This notice amends Standard No. 121, Air Brake Systems, to require trucks, buses and trailers equipped with air brakes to have service brake systems acting on all wheels. This amendment is being made in response to reports from several manufacturers that some trucks and trailers were soon to be constructed without front axle brakes. The agency concludes that such a change would result in a serious downgrading of existing brake systems and, accordingly, issues this amendment to prevent this from happening.

EFFECTIVE DATE: This amendment is effective July 24, 1980

FOR FURTHER INFORMATION CONTACT:
Mr. John Machey, Crash Avoidance Division, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590 (202-426-1714)

SUPPLEMENTARY INFORMATION: On October 18, 1979, the agency published a notice of proposed rulemaking (44 FR 60120) proposing the implementation of a small part of a new safety standard, Standard No. 130, Heavy Duty Vehicle Brake Systems. The agency has also issued two ANPRMs relating to long- and short-term rulemaking issues concerning Standard No. 130. Resolution of the issues raised in those notices will occur after all necessary agency research and analyses have been completed. The October 18 notice, which was very limited in its scope, proposed the implementation of a requirement that heavy duty vehicles have brakes acting on all wheels. The requirement was proposed in response to a developing problem that was brought to the agency's attention by both vehicle and equipment manufacturers concerning front axle brakes.

Standard No. 121, Air Brake Systems, formerly required trucks and trailers to comply with certain stopping distances and other road test requirements. To achieve these requirements, trucks and trailers were equipped with front axle brakes which aid significantly in improving vehicle stopping capability. However, in *PACCAR* v. *NHTSA*, 573 F.2d, 632 (9th Cir. 1978) *cert. den'd* 439 U.S. 862, the road test requirements were invalidated as they apply to trucks and trailers. In light of this development, several manufacturers tentatively decided to remove front axle brakes as a way to reduce slightly the costs associated with the production of heavy duty vehicles.

When the agency discovered that manufacturers intended to remove front axle brakes, the NHTSA reexamined data available to it concerning the effect that such a removal of brakes would have upon the capability of these vehicles to make safe stops. The results of this examination, which were detailed in the proposal and which are available in the docket, lead the agency to conclude that the removal of front axle brakes increases a vehicle's stopping distance. The amount of this increase depends upon the type of vehicle, the vehicle loading and the effectiveness of its remaining brake systems. Sometimes the increase in stopping distances is substantial.

The agency considers any increase in the stopping distance of heavy vehicles to be contrary to the interests of safety. Existing heavy duty vehicles equipped with front axle brakes already have longer stopping distances than many smaller vehicles on the road. This disparity in the stopping distances between large and small vehicles increases the likelihood of accidents between vehicles when both are involved in emergency braking maneuvers. To permit a reduction in the braking capabilities of heavy vehicles, that would

result in exacerbating the disparity between the stopping distances of heavy and lighter vehicles, could result in an increased risk of accidents to the occupants of both vehicle groups. To prevent the downgrading of heavy vehicle brake systems, the agency issued its notice of proposed rulemaking to require brakes acting on all wheels.

Sixteen comments were received in response to the notice of proposed rulemaking. Most of the commenters concurred with the agency's attempt to prevent the downgrading of heavy duty vehicle brake systems. However, many of the commenters raised minor objections to the manner in which the proposed action was to be taken.

The largest single complaint from the commenters concerning the proposal was that it would implement only a small portion of a new safety standard. Many commenters suggested that the agency should not implement any part of that standard (Standard No. 130) until all research has been completed and the agency is prepared to issue the standard in its entirety. In connection with this comment, several manufacturers suggested that the proposed amendment would be more appropriately placed in Standard No. 121.

Manufacturers argued the merits of amending Standard No. 121 rather than implementing Standard No. 130 in several ways. First, they argued that by implementing Standard No. 130 in a piecemeal fashion, the agency is subjecting itself to many of the criticisms that have surrounded Standard No. 121. Therefore, they suggested that the agency defer action on Standard No. 130 until a complete standard can be issued. Further, they stated that the implementation of a new safety standard would increase paperwork and would require changes in certification labels and incomplete vehicle documents. They suggest these changes would add costs and would require extending the leadtime before the proposed requirement could become effective. On the other hand, manufacturers stated that an amendment of Standard No. 121 would not require them to change certification labels or modify incomplete vehicle documents. This would lower the costs associated with the proposal. Also, the leadtime for implementing a change in Standard No. 121 would be minimal.

In response to the manufacturers first argument that no portion of Standard No. 130 should be implemented until the entire standard is ready for issuance, the agency disagrees. Currently, the NHTSA is conducting several research programs concerning heavy duty vehicle brakes. Some of this rulemaking is long-term while some is short-term. The agency contemplates implementation of some portions of the short-term rulemaking actions prior to obtaining information on all of its long-term rulemaking goals. This is the typical rulemaking process for many of the agency's standards. It is not in the interest of safety to defer short-term safety gains while waiting for the results of long-term safety rulemaking.

The agency is more persuaded by the manufacturers's second argument that implementation of a portion of Standard No. 130 at this time would unnecessarily impose additional paperwork burdens upon manufacturers, whereas amending Standard No. 121 to accomplish the same result would not increase their paperwork burdens. As the NHTSA indicated in the notice proposing this amendment, the agency seeks only to maintain the existing quality of braking systems. Whether this goal is achieved by amending Standard No. 121 or implementing part of Standard No. 130 is not important to the agency. However, since manufacturers would prefer amending Standard No. 121 and since implementing part of Standard No. 130 would be more costly, the agency agrees with those commenters who would prefer an amendment of Standard No. 121, and that standard is amended by this notice. Several commenters objected to the proposal on the grounds that it was a design standard rather than a performance standard. These commenters suggested that the agency should delay amendments implementing any requirements until the correct performance requirements are developed. The agency disagrees.

All of the agency's safety standards affect design choices to some degree. The very setting of any performance standard implies some narrowing of design choice. Although the agency attempts to minimize the effect, in some instances a significant limitation on design is necessary to secure a particular type of safety improvement. Standard No. 121 does not differ from other safety standards in its effect on design. It uses performance requirements although some elements of design are restricted. Even though this amendment increases slightly the standard's effect on design choice, the standard remains performance oriented. Further, the effect of the old standard was to require brakes acting on all wheels. Although this amendment is

more specific in that requirement, the result is the same. Commenters should note that the agency is not specifying the design of the brakes that must be used on each wheel. Accordingly, the NHTSA concludes that this amendment does not substantially or unnecessarily affect design and allows manufacturers significant flexibility in the design and improvement of their braking systems.

As a result of the *PACCAR* decision and the resulting possibility of brake performance downgrading, the agency is forced to take immediate corrective action. The *PACCAR* decision raised questions concerning the stopping distance requirements for trucks and trailers. The Court urged the agency to reexamine its stopping distance requirements and to ensure the propriety of any requirement that might be reimposed. In response, the agency has commenced exploratory rulemaking to determine the appropiate stopping distances for trucks and trailers. When the rulemaking is completed, it is contemplated that stopping distance requirements will be reimposed. The agency cannot reimpose those requirements until the research is completed. Given the absence of stopping distance requirements for trucks and trailers, and the time required for reimplementing stopping distances and the immediate problem of brake system downgrading, the agency must adopt a more expedient approach to prevent the existing levels of safety in heavy-duty vehicle brakes from being reduced.

Kelsey-Hayes supported this rulemaking action but at the same time requested an interpretation of an entirely unrelated section of Standard No. 121. Unrelated requests for interpretations should not be included with docket comments on a specific proposal. The agency will, however, respond to Kelsey-Hayes by a letter or in a separate notice.

In accordance with Executive Order 12044, the agency has reviewed the impacts of this proposed amendment and has determined that it is not significant. Since the amendment will merely require manufacturers to continue to manufacture vehicles as they are doing currently, the costs associated with this amendment will be minimal. Further, the agency has adopted the manufacturers' suggestions to incorporate this amendment in Standard No. 121 to further minimize the possibility of any increased costs.

Since this amendment imposed no additional burdens upon any manufacturer and only requires manufacturers to continue existing manufacturing practices and since it is in the interest of safety to prohibit as soon as possible the manufacture of vehicles without front axle brakes, the amendment is effective 45 days after publication in the Federal Register. In the notice proposing this amendment, commenters objected to an immediate effective date especially if the amendment were made in Standard No. 130. Commenters indicated that more time would be required to change certification labels. Since the amendment is being incorporated into the existing Standard No. 121, the agency considers these objections to the effective date to be no longer valid. Nonetheless, the agency is giving 45 days of leadtime to ensure that all manufacturers have ample time to comply with the requirements.

In accordance with the foregoing, Volume 49 of the Code of Federal Regulations, Part 571 is amended by revising Standard No. 121, Air Brake Systems, as follows:

1. A new paragraph S5.1.8 is added to 49 CFR Part 571.121 to read:

S5.1.8 Brake distribution. Each vehicle shall be equipped with a service brake system acting on all wheels.

2. A new paragraph S5.2.2 is added to 49 CFR Part 571.121 to read:

S5.2.2 Brake distribution. Each trailer shall be equipped with a service brake system acting on all wheels.

The principal authors of this notice are John Machey of the Crash Avoidance Division and Roger Tilton of the Office of Chief Counsel.

Issued on June 2, 1980.

Joan Claybrook
Administrator

45 FR 38380
June 9, 1980

PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems
[Docket No. 86-05; Notice 02]

ACTION: Final rule.

SUMMARY: This notice amends Federal Motor Vehicle Safety Standard No. 121, *Air Brake Systems,* to suspend the stopping distance requirements of S5.3.1 of the standard for buses other than school buses (non-school buses). Currently, S5.3.1 applies only to those non-school buses. The agency is taking this action because NHTSA has concluded that there is no safety need for the standard to be applied more stringently to manufacturers of non-school buses than to manufacturers of school buses. The agency will consider reinstating these requirements when it addresses the issue of reinstating stopping distance requirements for all heavy vehicles.

EFFECTIVE DATE: This rule becomes effective June 29, 1987.

SUPPLEMENTARY INFORMATION: This rule amends Federal Motor Vehicle Safety Standard (FMVSS) No. 121, *Air Brake Systems,* to suspend the stopping distance requirements of S5.3.1 of the standard for buses other than school buses (non-school buses). The notice of proposed rulemaking relating to this subject was published on July 9, 1986 (51 FR 24877).

Standard No. 121 specifies minimum performance requirements for air-braked trucks, buses and trailers. The standard has been in effect for trailers since January 1, 1975, and for trucks and buses since March 1, 1975. Requirements are established for the service, emergency and parking brake systems of those vehicles. Major requirements of the standard are that vehicles stop in specified distances and that the wheels not lock at speeds above 10 miles per hour (mph) during those stops. The "no lockup" requirement ensures that skidding due to wheel lockup and loss of lateral stability is minimized. Controlled lockup above 10 mph is allowed if other conditions are met, such as the use of antilock systems.

A prerequisite to the maintenance of stability and directional control of any automotive vehicle is that its tires continue rolling. A sliding tire can generate very little lateral force to control its direction of motion. Paragraph S5.3.1. of FMVSS No. 121 specifies stopping in limited distances from 20 to 60 mph, in the loaded and unloaded conditions on dry surfaces, and 20 mph with wet surfaces, with the vehicle remaining in a 12-foot wide lane and with limits on wheel lockup.

Background

Following implementation of Standard No. 121's requirements for trucks and buses in March 1975, the agency found a pattern of erratic behavior in the performance of the antilock systems used by manufacturers of transit and intercity buses to meet the "no lockup" requirements of the standard (S5.3.1). In 1976, NHTSA suspended (until January 1, 1977) the service brake stopping distance requirement (including the "no lockup" requirement) for all buses to provide a period in which modified antilock hardware and newly introduced systems could be field-evaluated (41 FR 1598; January 9, 1976). Subsequent notices extended the suspension of the requirements for transit and intercity buses until January 1, 1978, and the suspension of the requirements for school buses until April 1, 1978.

In March 1978, after the service brake stopping distance requirements for transit and intercity buses were allowed back into effect, the agency determined that the school bus service brake stopping distance requirements of the standard should remain suspended. 43 FR 12015 (March 23, 1978). The agency made this decision in order to maintain the status quo, since the Department had initiated a series of actions that were intended to resolve major issues with regard to the reliability, effectiveness and costs of the antilock system generally used at that time to meet the standard. Given that NHTSA was in the process of evaluating Standard No. 121, the agency had concluded that it would be inappropriate to change the status quo as it affected manufacturers of vehicles not then subject to the stopping distance and "no lockup" requirements of S5.3.1. NHTSA thereby

postponed the reimplementation of the service brake stopping distance requirements of Standard No. 121 as they applied to air brake school buses. The suspension of those requirements for school buses remains in effect today.

As to trucks and trailers, in April 1976, the U.S. Court of Appeals (9th Circuit) invalidated portions of Standard No. 121 that apply to those vehicles, including the "no lockup" requirements of S5.3.1 and S5.3.2. *PACCAR v. National Highway Traffic Safety Administration,* 573 F.2d 631 (9th Cir. 1978), *cert. denied,* 439 U.S. 862 (1978). NHTSA did not believe that any requirements of Standard No. 121 were invalidated for buses, because of a statement made in a footnote of the opinion that "[t]he part of the standard that regulates air-braked buses is not at issue here." The agency determined that this explicit statement that the court had not considered the merits of the bus requirements was intended to emphasize the limitation of its decision to trucks and trailers. Since the court did not consider those requirements, the fact that its decision left them undisturbed did not suggest any ratification of them. Thus, PACCAR did not increase the burden which the agency must meet in justifying a revision of the bus requirements.

The Blue Bird Body Company (Blue Bird), a manufacturer of buses and school buses, petitioned NHTSA to amend Standard No. 121 to exclude non-school buses from its service and emergency brake stopping distance requirements. Blue Bird requested this change because the service brake stopping distance requirements do not apply to school buses but do apply to non-school buses. In Blue Bird's view, this situation is unreasonable and overly burdensome to manufacturers of non-school buses. Blue Bird also questioned the practicability of the requirements, noting that it was losing its existing domestic supplier of antilock systems and might have to use a foreign manufacturer.

According to the petitioner, Blue Bird needs an antilock system to enable its short wheelbase, forward-engine buses to meet the requirement for 20 mph unloaded stops on surfaces with a skid number of 81. Antilock systems are installed to automatically modulate brake application pressures to avoid skidding in cases where the brake application is so strong, or the road surface so slippery, that wheel lockup would normally occur. Blue Bird's buses are able to meet the stopping distance requirements of the standard without the use of an antilock system under all other test conditions, because the driver of the vehicle is able to control wheel lockup by modulating the brakes. However, during the 20 mph unloaded test on a surface with a skid number of 81, there is insufficient time to modulate the brakes and, as a result, the rear brakes on Blue Bird's buses lock. Blue Bird stated that, although the rear wheels skid, the bus stops smoothly within the 35-feet stopping distance required by the standard, and no part of the bus leaves the roadway.

Blue Bird believed that if heavy trucks, truck-trailer combinations and school buses can be excluded from Standard No. 121's "no lockup" requirements, then non-school buses should likewise be excluded. The petitioner argued that the school buses and non-school buses it produces are essentially the same, except for differences in components or designs installed to meet Federal or State school bus standards (such as color, seating systems, lighting equipment, body panel joint strength and fuel systems). In its petition, Blue Bird pointed out that, in general, school buses have been required to have safety features beyond those required on other motor vehicles. The petitioner believed that there was no logic to require non-school buses to meet the stopping distance requirements of Standard No. 121 if school buses—virtually identical vehicles—are excluded from those requirements. If school buses were excluded from the requirements of the standard because there was no safety need to address, the petitioner argued it would follow that non-school buses should also be excluded from those requirements for the same reason. Blue Bird believed there are no valid reasons for different brake standards for nearly identical vehicles, and requested NHTSA to eliminate this apparent anomaly.

Proposed Rulemaking

The agency concluded that Blue Bird's request to amend the service brake stopping distance requirements had merit. On July 9, 1986, NHTSA published a notice in the *Federal Register* (51 FR 24877) which granted the part of the petition relating to the service brake stopping distance requirements and proposed rulemaking to revise those requirements. The petitioner's request to exempt non-school buses from the requirements for paragraph S5.7.1 was denied. Because S5.7.1 specifies emergency brake system requirements that all buses must meet, the agency concluded that the argument that non-school buses are unfairly subject to those requirements was without merit.

The agency believed Blue Bird's arguments relating to the service brake stopping distance requirements of Standard No. 121 deserved further

consideration because of the unusual circumstances surrounding the applicability of those requirements. NHTSA explained in the notice of proposed rulemaking (NPRM) that the court's decision in *PACCAR* and the suspension of the school bus service brake stopping distance requirements of the standard have created an historical anomaly in that the service brake stopping distance performance requirements (including the "no lockup" requirements of S5.3.1) have been suspended or otherwise made inapplicable to trucks, trailers and school buses, but remain in effect for non-school buses. NHTSA believed that a resolution of the issues raised by Blue Bird was needed because the application of S5.3.1 results in non-school buses being subject to more stringent requirements than school buses. There was no logical basis for the exclusive application of S5.3.1 to this particular category of vehicle, since notwithstanding Standard No. 121, higher levels of safety are generally required of school buses than any other vehicle type.

As explained in the NPRM, the agency believed an application of S5.3.1 to school buses alone or to school buses plus one or more other types of vehicles could be more appropriate since the population of affected vehicles would include the type of vehicle (school buses) generally regarded as having the greatest safety need. However, since S5.3.1 applies to buses only, an anomaly has resulted from the standard's exclusion of school buses and application only to a type of vehicle with a lesser safety need. NHTSA believed non-school buses are not so unique or peculiar to justify the distinction between them and other vehicles for which the requirements have been suspended. NHTSA thus found merit in the petitioner's argument that the requirements of S5.3.1 are inappropriate at this time for non-school buses if no comparable requirements are set for school buses.

The agency proposed to amend Standard No. 121 to suspend the service brake stopping distance requirements of S5.3.1 for non-school buses. NHTSA emphasized its rulemaking action should not be construed in any manner as commenting negatively on antilock performance or the potential use of antilock systems in the motor vehicle industry. The agency explained such a presumption would be mistaken since NHTSA has been actively involved with research on antilock systems, evaluating the performance of technology available currently in Europe and the stopping distance performances of existing vehicles. Because vehicle braking capability is a primary concern with NHTSA, the agency stated that stopping distance requirements might be reinstated in the future for all heavy vehicles.

Comments

Because a basis for the agency's proposed rulemaking was to alleviate the unfair burden imposed on manufacturers who produce both school buses and non-school buses by the application of S5.3.1, NHTSA was interested in comments from manufacturers producing both types of vehicles. The agency received one comment from a vehicle manufacturer, Ford Motor Company, who supported the rulemaking action as a domestic manufacturer and importer of motor vehicles. Two other comments were received on the proposal, one from the Insurance Institute for Highway Safety (IIHS) and the other from Ms. Barbara Witherspoon, who is a nursing professor at Florida Junior College in Jacksonville, Florida. IIHS and Professor Witherspoon were against adoption of the proposal.

The commenters addressed two main issues concerning the agency's proposed rulemaking: the effect of the amendment on safety, and the reinstatement of stopping distance requirements.

Effect on safety. The commenters were divided in their assessment of the safety issue. Professor Witherspoon argued that, while Blue Bird's request seems logical from an equitable standpoint, it "diverges from and dilutes the concern for public safety." Conversely, Ford Motor Company supported the proposed amendment to Standard No. 121 and believed that no safety need is being served by holding the one class of vehicles—non-school buses—to a more stringent requirement than heavy trucks, truck-trailer combinations and school buses.

NHTSA concurs with the argument implied by Ford that higher levels of safety would result if trucks, trailers and school buses were subject to the stopping distance requirements of S5.3.1 in addition to non-school buses. However, the agency does not agree that absolutely no safety need is served by applying S5.3.1 to non-school buses only. NHTSA continues to attach great importance to proper vehicle braking performance, which is demonstrated by the extensive research it has conducted on vehicle braking systems and the agency's enunciated goal of reinstating stopping distance requirements for all vehicle types. Nevertheless, NHTSA is unable to justify burdens resulting from the fortuitous and incongruous continued application of those requirements to non-school bus manufacturers.

NHTSA does not believe that the negative safety effects of this rulemaking will be significant because it is anticipated that this rule will affect only a small population of non-school buses, i.e., those that are unable to meet S5.3.1 without the use of antilock systems. As discussed earlier in this notice, Blue Bird already meets all but the low speed stopping distance requirement of the standard without the use of antilock. Even in that low speed stop, Blue Bird can meet the stopping distance requirement, but the wheels lock up. Further, NHTSA believes that most buses are able to meet the service brake stopping distance requirements without an antilock system and the agency does not anticipate manufacturers changing their vehicle designs in a way that would negatively affect conformance with the requirements. NHTSA believes that manufacturers of non-school buses will determine that it is in their best interest to continue to voluntarily meet those requirements. In this regard, NHTSA has determined to amend Standard No. 121 in a manner that leaves intact the specifications of S5.3.1, so as to provide manufacturers a set of guidelines which they may use to ascertain the performance level of their vehicles. Of course, as explained in the NPRM, leaving intact the specifications of S5.3.1 also facilitates reinstatement of stopping distance requirements for trucks, trailers and buses in the future.

IIHS objected to NHTSA's reasoning that the service brake stopping distance requirements of S5.3.1 should be suspended because no comparable requirements are set for school buses. IIHS argued that the typical operating environments (speeds, highways used, distances traveled) of school and non-school buses are so different that there is no logical need to have equivalent safety requirements.

NHTSA does not agree that the typical operating environments for school buses and other buses justify the different performance requirements for the two types of vehicles. We also note that we did not rely on any such difference in environments when allowing the present anomaly to exist. While buses carrying school children are typically seen on low-speed streets, they also use freeways and high-speed roadways to transport children on school activity trips. Those "activity buses" are school buses under NHTSA's regulations, subject to the same school bus safety standards as the buses used in neighborhood vicinities or urban traffic. Similarly, non-school buses can be used on local streets as well as high-speed roadways. Therefore, the agency has determined that school buses and other buses typically operate in similar environments and there is no logical basis for subjecting non-school buses to the requirements of S5.3.1 which have been suspended for school buses.

Research and Reinstatement of Safety Requirements

In the NPRM, NHTSA stated that it found merit in the petitioner's argument that the requirements of S5.3.1 are inappropriate at this time for non-school buses if no comparable requirements are set for school buses. At the same time, NHTSA explained that the agency was more inclined to suspend than to rescind the requirements because NHTSA might reinstate new stopping distance requirements in the future for trucks, trailers and buses. The IIHS commented that "[t]hese two directions are incompatible."

The meaning of that comment is not entirely clear to the agency. If IIHS is basing its statement on the belief that the future rulemaking to consider reinstating stopping distance requirements will not include those for school buses, NHTSA wishes to clarify that it did not mean to imply that school buses will be excluded from consideration. Since "school buses" are "buses" under NHTSA's regulatory definitions, school buses are included in the group of heavy vehicles for which reinstatement of stopping distance requirements will be considered.

IIHS argued that an amendment to Standard No. 121 along the lines proposed in the NPRM would signal U.S. suppliers of brake systems to "forget" modern brake technology for buses and large trucks, which would result in a degradation of large vehicle braking performance. NHTSA disagrees. Since S5.3.1 currently does not apply to most large vehicles, this amendment would not significantly affect the state-of-the-art technology relating to large vehicle braking performance. Also, such a message would be inconsistent with statements made by the agency in the past, most recently by the announcement in the NPRM concerning the likelihood of future rulemaking action on heavy vehicle braking performance. Further, the agency's research activities on antilock technology and stopping distance performances of existing vehicles should also effectively signal the agency's interest and activity in reinstating service brake stopping distance requirements.

With respect to NHTSA's request for comments relating to the possible reinstatement of the school bus stopping distance requirements, commenters were generally supportive of reinstatement. IIHS believed that NHTSA should encourage the

development and application of antilock brakes for all heavy vehicles, including school buses. Ms. Witherspoon stated that, if Standard No. 121 has afforded some degree of safety in complying vehicles, requirements for school buses should be reinstated. NHTSA has found these comments helpful and will evaluate them further along with other available information when it considers proposing school bus stopping distance requirements in the future.

For the reasons given above, NHTSA is amending Standard No. 121 to suspend the requirements of S5.3.1 applicable to buses. As explained above, NHTSA will keep the specifications of S5.3.1 intact as currently set forth in the standard in order to facilitate reinstatement of affected sections in the future and to provide guidance to manufacturers who choose to manufacture their vehicles to the performance levels specified therein.

Effective Date

This rule is effective upon publication in the *Federal Register*. The agency finds good cause for an immediate effective date because this amendment relieves a restriction whose isolated application to bus manufacturers has been determined by NHTSA to be inappropriate. The rule does not specify different or additional requirements and requires no leadtime for preparation by vehicle manufacturers.

In consideration of the foregoing, 49 CFR 571.121, *Air Brake Systems,* is amended as follows:

S3. * * *

Notwithstanding any language to the contrary, sections S5.3.1, S5.3.1.1, S5.3.2, S5.3.2.1, S5.3.2.2, S5.7.1, S5.7.3(a) and S5.7.3(b) of this standard are not applicable to trucks and trailers, and section S5.3.1 of this standard is not applicable to buses.

3. In §571.121, S5.3.1 introductory text is revised to read as follows:

S5.3.1 *Stopping distance—trucks and buses.* When stopped six times for each combination of weight, speed, and road condition specified in S5.3.1.1, in the sequence specified in Table I, the vehicle shall stop at least once in not more than the distance specified in Table II, measured from the point at which movement of the service brake control begins, without any part of the vehicle leaving the roadway and without lockup of any wheel at speeds above 10 mph except for:

* * * * *

Issued on May 28, 1987

Diane K. Steed
Administrator

52 F.R. 20602
June 2, 1987

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems

[Docket No. 87-04; Notice 3]

ACTION: Final rule.

SUMMARY: This notice amends Federal Motor Vehicle Safety Standard No. 121, *Air Brake Systems*, to clarify the standard's parking brake requirements. The amendments require actuation of a mechanical means for holding the parking brakes, within three seconds after operation of the parking brake control. (For trailers, such actuation is required within three seconds after venting to the atmosphere of the front supply line connection is initiated.) In addition, vehicles are required to be capable of meeting requirements related to parking brake retardation force within the three second period. The amendments also require that the grade holding test (or alternative drawbar test) be met with only the mechanical means of holding the parking brakes in operation.

EFFECTIVE DATE: The amendments made by this rule are effective April 11, 1988. The amendments require mandatory compliance effective September 7, 1988, while permitting manufacturers to comply with the new requirements as an option to complying with requirements being superseded effective April 11, 1988.

SUPPLEMENTARY INFORMATION:

Background

On March 17, 1987, NHTSA published in the *Federal Register* (52 FR 8317) a notice of proposed rulemaking (NPRM) to clarify the parking brake requirements of Federal Motor Vehicle Safety Standard No. 121, *Air Brake Systems*. The notice was issued as part of a rulemaking action which had been initiated in response to a petition submitted by the California Highway Patrol (CHP).

The CHP petition largely focused on the "Mini-Max" parking brake, produced by International Transquip Industries, Inc. In some versions, this parking brake was applied with air pressure (usually about 100 psi) and held by air until the air pressure dropped, in some cases to as low as 40 psi, to a point at which the brake became held mechanically. The drop in air pressure could occur over a period of many hours, during which time the braking force significantly decreased. CHP expressed concern that such a system could result in "false parking," i.e., a situation in which subsequent to application of a vehicle's parking brake by the driver, the parking force decreases to the point that the vehicle could roll away if parked on a hill.

CHP noted that section S5.6.3 of Standard No. 121 requires that "once applied, the parking brake shall be held in the applied position solely by mechanical means," and argues that this wording had for years made it illegal for a parking brake system to be held in the applied position by air pressure. The petitioner expressed concern that a 1984 interpretation seemed to say that the parking brake can be held in the applied position by air pressure, as long as there is a possibility of a mechanical system locking itself by the time 60 percent of the pressure leaks off or is suddenly lost. CHP requested that NHTSA either amend Standard No. 121 to prohibit systems that have the probability of resulting in false parking or issue an interpretation of section S5.6.3 with sufficient limits to accomplish the same result. Subsequent to the CHP petition, NHTSA received comments on the petition and other information from International Transquip, as well as additional information from CHP.

In evaluating the issues raised by CHP's petition, NHTSA considered whether it would be appropriate to resolve them by issuing an interpretation of section S5.6.3. As discussed in the NPRM, the wording of that section (quoted above) does raise certain issues relating to whether parking brake systems with delayed mechanical application force comply with Standard No. 121. As noted by the CHP and International Transquip submissions, NHTSA has made a number of past interpretations concerning that section. The NPRM noted, however, that while NHTSA has never concluded that brake systems resulting in false parking are safe or provided an interpretation that the particular parking brake system cited by CHP complies with section S5.6.3, some of

the past interpretations could contribute to ambiguity concerning whether some of the features incorporated in that parking brake system are permitted by the standard. For this reason, and in light of a safety concern about false parking, NHTSA granted the CHP petition to initiate rulemaking on the false park issue rather than issuing an interpretation whether or not such systems comply with section S5.6.3.

The NPRM

In the March 1987 NPRM, NHTSA explained its concern about braking systems which result in false parking. The agency stated the following:

> If a vehicle is parked on a grade and the parking brake can be set so that it just holds the vehicle on the grade with the force applied when the driver actuates the parking brake control, the vehicle could roll away if that parking force later drops. Thus, a driver could be misled into parking on a grade which is only initially within the holding capability of the parking brake. The driver might park the vehicle and walk away thinking it was secure, only to have it later roll away. The safety hazards connected with large, heavy trucks rolling away could be particularly serious. 52 FR 8318.

Based on this safety concern, NHTSA proposed to require that, within five seconds of the time parking brakes are actuated, they must be held in the applied position solely by mechanical means and the retardation force of the parking brake system cannot decrease in the event of a decrease in the air or brake fluid pressure of any of the vehicle's service or parking brake systems. For trucks and buses, the brake actuation was defined as when the driver actuates the parking brake control. For trailers, the brake actuation was defined as when venting to the atmosphere of the front supply line connection is initiated. The five second period was intended to be short enough to ensure that vehicles would be stably parked at the time drivers leave them, while long enough to permit the use of air applied-mechanically held parking systems. The agency believed that several seconds could be required for the air pressure in such systems to be evacuated, which would be necessary to achieve a mechanically held condition.

NHTSA also proposed to require that vehicles be capable of meeting requirements related to parking brake retardation force within two seconds of the time the parking brakes are actuated. The agency stated that it believed that retardation force should be generated in as short a time as is practicable, since the parking brake system is sometimes also used as an emergency braking system. NHTSA also stated that there is a definite need for fast parking brake apply times on some trailers, because there are tractors which modulate the parking brakes through the supply line to provide for trailer braking in the event of a control line failure. A trailer with slow parking brake times would degrade the emergency braking performance of combinations having such tractors.

The agency indicated in the NPRM that the number of parking brake systems that might be affected by the proposal was very small. The only current system other than the Mini-Max which the agency believed might be affected was the DD3 parking brake system produced by Bendix. The agency indicated that it believed it might be possible for International Transquip to redesign all of its braking system configurations to comply with the proposed requirements.

Comments

NHTSA received numerous comments on both the proposed five second requirement related to false parking and the proposed two second requirement related to parking brake retardation force.

A number of commenters supported the proposed requirement related to false parking. The Heavy Duty Brake Manufacturers Council (HDBMC), an activity of the Heavy Duty Manufacturers Association/Motor and Equipment Manufacturers Association, stated that it strongly supports the proposal and agency rationale. Individual brake manufacturers supporting the proposal include Midland Brake, Rockwell, and Bendix. Bendix, which manufactures the DD3 brake, stated that it has always been aware of the rollaway possibilities of vehicles that are parked on air. That commenter stated that it now offers the DD3 in a "demonstrated-park" version, which meets the proposed requirement. That company also submitted data showing that it is possible for a driver to actuate the parking control and exit a vehicle in about four seconds, and suggested that the five second time period be reduced to three seconds. The Truck Trailer Manufacturers Association (TTMA) stated that it supports the proposed requirement, which would assure that false parking does not become a problem in the future. Corpac Industries, a trailer manufacturer, also

supported adoption of the proposed requirement. General Motors and Ford supported the proposed requirement related to false parking. Flxible, a bus manufacturer, submitted comments indicating that it had experienced various problems, including vehicle rollaway, using test systems constructed by Mini-Max specifically for Flxible. That commenter stated that, from an opinion point of view, anything that results in, or allows a delay in setting the parking brakes to a mechanically held condition, and with its experienced conditions, could result in an operator going away from the vehicle and a runaway condition developing. The Insurance Institute for Highway Safety also supported the proposal.

While Rockwell generally supported the proposal, it stated that it believes that there may be certain unique vehicle configurations where "parking-with-air" may be desirable and perhaps necessary to achieve required performance and durability goals. According to that commenter, such configurations include one-man operation refuse packers and transit buses. Rockwell stated that allowance for configuration such as these should be considered in an amendment.

Some commenters suggested alternative means for dealing with the false park issue. Navistar stated that it believes the agency can solve the problem of false parking by defining when the parking brakes are fully applied by mechanical means, and that it is unnecessary to add a five second timing requirement. Volvo White stated that the current Standard No. 121 requirements are sufficiently clear and that a change in the rule is unnecessary. Freightliner stated that it does not believe that the false park issue is applicable to spring brake systems and that Standard No. 121's current language is sufficient to ensure that parking brakes are held solely by mechanical means.

CHP stated that while it remains concerned about the possibility of false parking, the requirement proposed by NHTSA would have the effect of eliminating some systems using the Bendix DD3 as well as Mini-Max. That commenter stated that, in its view, both devices offer beneficial characteristics and a unique small size for special applications. CHP stated that its concern remains that any system which allows movement of the pushrod before locking invites the possibility of a false park situation. That organization stated that, in response to its original concern, International Transquip had redesigned the Mini-Max brake chamber to have the locking piston dropped on brake application, thereby holding the brake at a much higher force. (In the Mini-Max parking brake, the locking piston is a pawl which drops to engage teeth cut in the brake pushrod.) CHP recommended that the proposed requirement be modified into a two-step test procedure, requiring actuation of the mechanical locking device within five seconds after initial brake application, and separately requiring that the slope holding test be met with only the mechanical locking device in operation, after the brakes have bled down to a zero pressure reading. CHP argued that the obvious advantages of pressure on the diaphragm at the time of the brake application should not be discarded, and that its recommended wording would ensure that the system had no false park by requiring zero pressure on the diaphragm during the slope holding test.

A number of commenters strongly opposed the proposed requirement related to false parking. International Transquip argued that the proposal had been made in response to theoretical concerns which are unjustified based on operational experience in Canada with thousands of vehicles whose braking systems employ air-applied delayed mechanical parking. That commenter asserted that the current 20 percent grade holding requirement is more than adequate since heavy vehicles do not park on grades as steep as 20 percent and a margin of additional holding force and safety is already factored into this requirement. International Transquip also argued that the proposed requirement would, in practice, prohibit use of an air back-up to any mechanical lock, and deny the industry several safety benefits such as shorter emergency stopping distances, better pneumatic balance between chambers, earlier detection of air leaks, and effective emergency modulation on trailers. That company stated that technical or economic problems may preclude compliance by air-applied mechanically held brakes with the proposed amendment, thereby denying the industry a safer shop alternative, as well as a unit suitable for lowbed trailers and other space constrained applications. That commenter also stated that air-applied mechanically held brakes can provide substantial economic benefits to the industry, which would be lost if the proposed requirement is adopted.

International Transquip argues that the current regulations as worded in a final rule published in 1979 are more than adequate to protect against the minimal hazards of parked heavy vehicles. That commenter asserted that the 1979 rule does not have the phrase "solely by mechanical

means." (The agency notes that the phrase "solely by mechanical means" was included in Standard No. 121 prior to the 1979 rule and not deleted by that rule.) International Transquip stated that if the agency is determined to amend its regulations, the agency should adopt language requiring that, within the proposed five second time period, "the parking brakes shall be held in the applied position by mechanical means or a mechanical means of holding the application in the event of loss of fluid or air pressure must be in position and must be capable of achieving the minimum performance specified in either S5.6.1 or S5.69.2."

Additional comments were submitted on behalf of International Transquip by the law firm of Crowell & Moring. That firm argued that the problem of false parking does not exist and the proposed requirement is misfocused. According to that commenter, it is not change in parking force that is unsafe but insufficient force. Crowell & Moring argued that the mechanical park of the Mini-Max comes into play at a level of parking force sufficient to prevent rollaway under any relevant circumstances. That firm also argued that adoption of the proposed requirement would eliminate a proven, safe technology and deprive the public of the safety and economic advantages of the Mini-Max brake.

Several members of Congress submitted comments opposing the proposed amendment, citing materials prepared by International Transquip. The Private Truck Council of America argued that the proposed requirement was issued without any documented evidence of rollaway. That commenter stated that restrictive regulations may stifle creative improvements in truck design and urged that the proposal be rescinded unless some clear and convincing evidence of necessity is available. John L. Schandelmeier, a private consultant on brake systems, argued that Mini-Max and DD3 brake chambers, when piped as air applied, air held, and mechanically locked brakes, offer superior emergency brake stopping and grade holding capability to spring brakes. That commenter asserted that the version of the DD3 brake in which air is immediately released is less desirable than the earlier one because emergency stopping distances are increased. Several other other commenters also opposed the proposed amendment, generally making similar arguments to those of International Transquip.

Echlin commented that the air brakes it manufactures for use by vehicle manufacturers in the United States are compatible with the proposed requirements. That company expressed concern, however, that Transport Canada has in the past followed the lead of NHTSA with respect to Canadian regulations. Echlin stated that it produces a valve in Canada, used in trailer brake systems, that applies a pneumatic emergency application which is backed up by spring applied brake application. That company indicated that these vehicles differ in several respects from United States vehicles, but expressed concern that if the proposal were adopted in Canada, there could be a serious reduction in the emergency stopping capability of the Canadian trailers. TBG Warehousing Limited, a Canadian company, stated that vehicles with air park systems have been manufactured in Canada for many years and expressed concern that adoption of the proposal would be detrimental to both the United States and Canada.

As with the proposed requirement related to false parking, NHTSA received comments both supporting and opposing the proposed two second requirement concerning parking brake retardation force. HDBMC supported the proposed requirement, stating that it agrees that vehicles should be capable of meeting requirements related to parking brake retardation force within two seconds of the time the parking brakes are actuated. Midland Brake stated that it has data regarding parking brake application time for trucks and trailers which show that the two second apply time should be acceptable for these vehicles. TTMA stated that the two seconds proposed as the time for meeting the parking brake retardation force appears to be reasonable from both operational and safety aspects. Corpac stated that, based on limited tests, the proposed time of two seconds for meeting the parking brake retardation force is correct and has an ample margin of reserve to allow for variations in the manufacturing process.

Bendix commented that the stated purpose of the two second timing is to assure the parking brakes have adequate response timing when they are used to provide modulated emergency braking. That company argues that a time requirement for emergency brake systems should not be incorporated within the scope of this proposed rulemaking. Bendix stated that since its data show that current parking brake systems are capable of achieving demonstrated park in less than two seconds, there is no need for the proposed two and five second requirements. That company suggested that the proposed response time re-

quirement of "at any time after two seconds" to achieve the required parking force be changed to "within three seconds" the parking brake system shall achieve and thereafter maintain the required mechanically held parking force.

Volvo White opposed the two second timing requirement, stating that it would result in an unsafe "whiplash" condition during compliance testing and would require it to review all its certifications and conduct new certification tests. That commenter also argued that it and other truck manufacturers should not be required to expend resources for a potential problem it contends is limited to towed vehicles. Volvo White also stated that it disagrees that the proposal is not "major" or "significant."

Navistar stated that it believes that proposed "two second to hold" requirement would seriously jeopardize the ability of many of its current vehicles to comply with Standard No. 121, although there are no available test data. That company asserted that it would need a minimum of two years lead time to investigate all production vehicles for compliance and to develop new designs where required. Navistar also argued that to impose a timing requirement on parking brake application because the parking brake is often also used as an emergency brake system is inappropriate in a proposal to prohibit false park systems. That company stated that its emergency brake systems never employ only the parking brakes to satisfy Standard No. 121's emergency brake system performance requirements, and argued that it is not appropriate for the agency to propose changes to the emergency brake systems without a compelling need to do so and without data which indicate a problem or need for change.

Freightliner argued that timing requirements would impose a general restriction on all parking brake systems; that the metal spring system was designed for overall performance, not speed of application; and that developing additional procedures to determine compliance would use resources to document timing, not improve the braking performance of a reliable mechanical design. Ford expressed concern about imposing additional recertification burdens on truck manufacturers. MVMA stated that it assumes that the agency did not intend to impose a new requirement for spring brake parking systems.

False Parking

After reviewing the comments, NHTSA remains concerned about false parking. As the agency stated in the NPRM, if a vehicle can be set so that it just holds the vehicle on the grade with the force applied when the driver operates the parking brake control, the vehicle could roll away if that parking force later drops. Thus, a driver could be misled into parking on a grade which is only initially within the holding capability of the parking brake. The driver might park the vehicle and walk away thinking it was secure, only to have it later roll away. NHTSA notes that since the National Traffic and Motor Vehicle Safety Act is directed toward unreasonable risks, it is unnecessary for the agency to wait for actual accidents in order to issue safety standards.

While NHTSA continues to be concerned about false parking, it is also concerned that its safety standards not constrain the development and use of new designs which have the potential to offer a level of safety equivalent to that offered by existing designs. After reviewing the comments, the agency is persuaded that a requirement prohibiting any decrease in parking retardation force after five seconds from the time the parking brakes are actuated would inappropriately constrain the development and use of air-applied mechanically held parking brake systems.

The agency notes first that while the proposed requirement would effectively prohibit brake systems which result in false parking, it would also have the effect of prohibiting systems unlikely to result in false parking under reasonably foreseeable conditions. For example, brake systems with delayed mechanical parking occurring more than five seconds after actuation would be prohibited even if the final parking retardation force was sufficient to hold on *any* existing grade.

Second, NHTSA is persuaded by the comments that it may not be possible to design air-applied mechanically held parking brake systems acceptable for general use which can meet a requirement necessitating almost immediate evacuation of air from the brake chambers. In issuing the NPRM, the agency believed that the proposed five second time period would permit continued use of air-applied mechanically held parking systems, which could require several seconds for the air pressure to be applied to the brake chamber, a mechanical latch or lock to be activated, and the air pressure to be evacuated to result in the mechanically held condition.

As indicated above, Bendix has designed a version of the DD3 which meets the proposed requirement. While this indicates that it is technically feasible to produce an air-applied mechani-

cally held parking brake system that can meet the proposed requirement, it does not indicate that such systems are necessarily acceptable for the full range of air-braked vehicles. The agency notes that the DD3 is a specialized brake which is used primarily on buses. The agency also notes that the comment by John Schandelmeier indicates that some operators and drivers find the complicated "cluster valve" arrangement of that design to be unacceptable and are re-piping it to attain the performance of the earlier version.

International Transquip commented that there are no guarantees that its brake could be plumbed to meet the proposed requirement and that many of the problems experienced by Flxible with a prototype Mini-Max system were related to Flxible requiring the immediate exhausting of the application air pressure upon each parking brake application. International Transquip stated that Flxible's experience underscores the fact that problems remain to be solved. NHTSA accepts International Transquip's assertion, particularly given the problems that company experienced in attempting to develop a system in which application air pressure would be immediately exhausted. International Transquip also expressed concern that some of the potential advantages of an air-applied mechanically held parking brake would be lost as a result of immediate evacuation of air from the brake chambers.

Third, the agency believes that the basic concept of air-applied mechanically held parking brakes offers theoretical benefits. The CHP petition, for example, discussed a number of potential advantages that air-applied parking brakes have compared to conventional spring brakes. In addition to savings in space, weight, initial cost, maintenance cost, and disassembly precautions. CHP cited the following advantages: (1) the fact that the service brake hoses and diaphragms receive full reservoir pressure each time the parking brake is pulled, thereby providing a frequent check for service brake system integrity; (2) the brakes are solidly locked for special vehicle operations where a stable platform is needed, and the vehicle can be held stationary on much steeper grades than with spring brakes as long as full air pressure is retained; (3) the increase in pushrod travel from maladjusted brakes does not decrease the parking brake torque as badly as with spring brakes, and (4) loss in application force at the air parking brake of one wheel can be detected audibly by an air leak or visually by nonoperation of the pushrod.

NHTSA cautions that in citing potential advantages of air-applied parking brakes, the agency is not taking the position that the concept of air-applied parking brakes is superior to spring brakes. Moreover, the agency is not taking any position about the overall safety of the Mini-Max or DD3 parking brakes as compared to each other or to spring brakes. However, given that the concept of air-applied parking brakes offers potential advantages, the agency believes that care should be taken to ensure that Standard No. 121 does not unnecessarily constrain the development and use of designs incorporating this concept.

NHTSA also cautions that while it has necessarily considered whether various parking brake systems appear to meet the specific requirements being adopted by this notice, it has not conducted compliance or other tests for those parking brakes or attempted to evaluate whether, or under what circumstances, vehicles equipped with those parking brakes would meet the overall requirements of Standard No. 121. The agency notes that Standard No. 121 applies to vehicles. Under the National Traffic and Motor Vehicle Safety Act, it is the responsibility of the vehicle manufacturer to ensure that its vehicles comply with Standard No. 121. The discussion in this notice of whether various parking brake systems appear to meet particular requirements is based on the agency's understanding of those systems as presented in this notice and is limited to the specific issues and requirements being addressed. This notice should in no way be read as either an approval of any particular parking brake systems or a determination that vehicles equipped with particular parking brake systems will comply with Standard No. 121.

The agency also notes that the comparisons made by some commenters of the emergency stopping distances of vehicles equipped with Mini-Max brakes and conventional spring brakes may not be appropriate. The tests in question indicated that under certain circumstances if a vehicle is stopped solely by using the parking brake, a Mini-Max parking brake would stop the vehicle in a shorter distance than a spring brake, due to a higher application force. This comparison may not be appropriate, however, because trucks, buses, and tractor-trailer combinations are not typically stopped by solely using a parking brake. Standard No. 121 requires trucks and buses to have an emergency brake system. The emergency brake systems provided on trucks, buses, and tractor-trailer combinations built in compliance with

Standard No. 121 are similar to the split brake systems used on passenger cars in that when a brake failure occurs, part of the service brake system remains operable (as the emergency brake system) to permit driving in a controlled manner to a safe parking place. Emergency brake systems are required to be capable of modulation by drivers to provide for good vehicle control during braking; they are also required to be controlled by the regular service brake control valves so that drivers are not confused in crisis situations about how to operate the emergency brake system. Since parking brakes are controlled by a separate valve, they can serve as backup brake systems when something unusual causes both the service and emergency brake systems to fail, e.g., complete loss of air pressure or failure of the service brake control valve. The agency has stated in the past, however, that it is generally not desirable to have brakes used in a backup system develop overly high brake forces, given the potential for wheel lockup and loss of vehicle control.

NHTSA also notes that, unlike spring brakes, air-applied parking brakes may not provide a backup braking capability in the event of a complete loss of service/emergency braking air pressure *unless* they are applied by an energy source which is completely separate from the service/emergency brakes systems. When a failure occurs in the service brake systems of current vehicles equipped with spring brakes, the emergency brake system takes over and a driver can continue to modulate the brakes down to low pressures knowing that the spring brakes can be applied in the event a faster stop is required. However, air-applied parking brakes will only apply with the pressure remaining in the emergency reservoir unless they are applied by an energy source which is completely separate from the service/emergency brakes.

In developing a final rule, NHTSA believes that weight should be given to both the potential problem of false parking and ensuring that Standard No. 121 does not unnecessarily constrain the development and use of air-applied mechanically held parking brake systems. After carefully considering the comments, the agency believes that the amendment suggested by CHP gives appropriate weight to both concerns. As indicated above, CHP recommended that the proposed requirement be modified into a two-step test procedure, requiring actuation of the mechanical locking device within five seconds after initial brake application, and separately requiring that the slope holding test be met with only the mechanical locking device in operation, after the brakes have bled down to a zero pressure reading.

NHTSA is adopting amendments along the lines suggested by CHP in its comments. For trucks and buses, the amendments require actuation of a mechanical means for holding the parking brakes, within three seconds after operation of the parking brake control. For trailers, such actuation is required within three seconds after venting to the atmosphere of the front supply line connection is initiated. The amendments also require that the grade holding test (or alternative drawbar test) be met with only the mechanical means of holding the parking brakes in operation. In light of comments from Bendix and Midland Brake, the agency is specifying more detailed test conditions in order to ensure objectivity.

CHP's comment indicated that, in response to its original concerns, International Transquip had redesigned the Mini-Max brake chamber to have the locking piston dropped on brake application, thereby holding the brake at a much higher force. A requirement for actuation of the mechanical locking device within a three second period has the effect of requiring the locking piston to drop on brake application, thus alleviating much of the safety concern which led CHP to submit its petition. In addition to holding the brake at a much higher force (a result which is dependent on that company not reducing the brake application pressure below a certain level), the dropping of the locking piston on each parking brake application ensures that the locking piston will not stick as a result of non-use. Since International Transquip has already made this design change, the amendment will have no adverse impacts on that company.

As indicated above, the five second time period proposed in the NPRM was intended to be sufficiently long to permit air pressure to be applied to the brake chamber, a mechanical latch or lock to be activated, and the air pressure to be evacuated to result in the mechanically held condition. Since the amendment being adopted does not require the air pressure to be evacuated, it is unnecessary to provide a time period as long as five seconds. NHTSA has concluded that the requirement that parking brakes be actuated within three seconds can easily be met by both air-applied mechanically held parking brake systems and by spring brakes. For the Mini-Max parking brake, actuation occurs when the air pressure on the lock port is sufficiently vented to allow the pawl to drop and

physically contact the toothed section of the pushrod shaft. For the DD3 parking brake, actuation occurs when the air pressure on the lock port is sufficiently vented to allow locking rollers to physically contact the pushrod shaft. For spring brakes, actuation occurs when the air pressure in the spring brake chamber is sufficiently vented to allow the spring to physically contact the push rod pushplate. NHTSA believes that the redesigned Mini-Max parking brake, both versions of the DD3 parking brake, and current spring brake systems already meet the three second actuation requirement.

NHTSA notes that while the locking piston of the new Mini-Max design drops immediately on brake application, there may still be a reduction in parking retardation force over time, as there may be with other air-applied mechanically held parking brake designs. As noted earlier, in the Mini-Max parking brake, the locking piston is a pawl which drops to engage teeth cut in the brake pushrod. Under the old design, the locking piston was held off by the same air pressure used to make and temporarily hold the parking brake application until the air pressure dropped to a predetermined level, in some cases as low as 45 psi. Under the new design, the locking piston drops almost immediately. In both of these designs, the parking application is not actually held by mechanical means until the pushrod moves enough to engage one of the teeth on the pushrod. Since the locking piston of the new design drops on brake application, however, the pushrod can move no further than 7/32 of an inch, the distance between the teeth on the pushrod.

The amount of parking brake force reduction associated with 7/32 inch movement of the pushrod would vary depending on the application pressure and overall design of the brake system. Available data indicate that the additional air pressure necessary to move the pushrod on various types of truck, tractor, and trailer brake systems 0.2 inches (7/32 = 0.21875) from a starting pressure of 40 psi could range from 19 to 28 psi. By way of example, if an application pressure of 70 psi were assumed, a 28 psi reduction would mean a reduction in pushrod force of about 40 percent. Data provided by Bendix indicate that the DD3 brake system without the "demonstrated park" feature can have a reduction of the force acting on the brake chamber pushrod of about 25 percent. However, due to the significant hysteresis in the foundation brakes of air-braked vehicles, a reduction in pushrod force would result in a lesser percentage reduction in actual braking force output. (In this context, the term "hysteresis" means that the change in brake force output at the wheel due to a change in pushrod force will be different for a given change in pushrod force, depending on whether the pushrod force is increasing or decreasing.)

As indicated above, International Transquip suggested an amendment requiring that, within five seconds after operation of the parking brake control, the parking brakes "shall be held in the applied position by mechanical means or a mechanical means of holding the application in the event of loss of fluid or air pressure must be in position and must be capable of achieving the minimum performance specified in either S5.6.1 or S5.6.2." The agency considered an amendment along these lines but believes that the meaning of "in position" is unclear. In the Mini-Max design, for example, if the pawl should immediately drop onto the top of a tooth, it might not be considered "in position" to hold the vehicle until the pushrod moves enough to let the pawl drop between the teeth.

There has not been any dispute about the existing Standard No. 121 requirement that the 20 percent grade holding test (or alternative drawbar test) be met with only the mechanical locking device in operation, i.e., after any reduction in parking brake retardation force occurs. (The alternate drawbar test is of similar stringency to the 20 percent grade holding test.) NHTSA believes that new and reasonably maintained vehicles meeting this requirement and the requirement discussed above concerning actuation of the mechanical means for holding the vehicle would not experience false park problems when parked under reasonably foreseeable conditions. Twenty percent grades are rare, and it would be uncommon for air-braked vehicles to be parked on grades even approaching that steepness. The agency also notes that, after a review of available data. It is unaware of any air-applied mechanically held parking brakes which have experienced false park problems. Transport Canada has also indicated that it is unaware of any such problems.

The agency recognizes, however, that unlike the specific amendment set forth in the regulatory text of the NPRM, the amendment being adopted does not address all theoretical false park situations. For example, the initial CHP petition noted that if brakes are at or beyond the recommended limit of pushrod travel, or the owner replaces the lining with a type having a lower coefficient of

friction than the original equipment, the mechanical parking lock will not hold the vehicle on a grade even considerably less than the specified 20 percent, and also cited the possibility that a driver might park a vehicle on a steep city hill with a 22 percent grade. NHTSA does not believe that there is any way to address these theoretical situations by a new vehicle regulation short of a requirement that would unnecessarily constrain the development and use of air-applied mechanically held parking brake systems. However, NHTSA notes that manufacturers have an obligation under the National Traffic and Motor Vehicle Safety Act to produce vehicles without safety related defects. NHTSA expects that manufacturers will design vehicles in such a manner to ensure that air-braked vehicles will not experience false park problems when parked under reasonably foreseeable conditions.

NHTSA notes that General Motors commented that the condition that parking brakes be held in the applied position "solely by mechanical means" is design restrictive and excludes adoption of advanced technology parking brake systems which employ other mechanizations. That company recommended deletion of the words "solely by mechanical means" but did not elaborate on the possible technologies it had in mind. While the amendment being adopted does not include the specific term "solely by mechanical means," it does, as indicated above, require that the grade holding test (or alternative drawbar test) be met with only the mechanical means of holding the parking brakes in operation. The purpose of this requirement is to ensure that the parking brake can maintain the specified minimum parking brake retardation force level even if there are slow leaks in the air or fluid systems of the vehicle or electrical failure.

Parking Retardation Force Timing

After reviewing the comments, NHTSA continues to believe that parking retardation force should be generated quickly, since the parking brake system is sometimes also used as an emergency system. Moreover, as part of ensuring objectivity, the agency believes that a standard specifying minimum retardation force requirements for parking brakes should specify the time when those requirements must be met.

NHTSA is adopting amendments along the lines of the proposal, although a time period of three seconds instead of two seconds is specified. Data provided by Bendix indicated that the compliance of some current parking brake systems might be marginal for the proposed two second requirement. Therefore, in light of the fact that NHTSA did not contemplate changes in current parking brake systems, the agency is adopting a three second requirement. NHTSA believes that all current parking brake systems easily meet this requirement. Since certification can be accomplished by engineering analysis and simple tests, certification costs will be minimal.

For trucks and buses, the amendments require minimum parking retardation force requirements to be met at all times after three seconds from the time of actuation of the parking brake control. For trailers, the amendments require minimum parking retardation force requirements to be met at all times after three seconds from the time venting to the atmosphere of the front supply line connection is initiated. As with the timing requirement for actuation of the mechanical means for holding the parking brakes, the agency is specifying more detailed test conditions in order to ensure objectivity.

NHTSA does not agree with the argument raised in the comments that the potential safety problem addressed by this requirement is limited to towed vehicles. While the agency stated in the NPRM that there is a definite need for fast parking brake apply times on some trailers, because there are tractors which modulate the parking brakes through the supply line to provide for trailer braking in the event of a control line failure, the parking brake systems of power units may also be used for backup emergency braking. Thus, the need for quick generation of parking retardation force is relevant to power units as well as towed vehicles.

NHTSA has carefully considered the comments arguing that the proposed requirements would cause testing and certification difficulties. The agency does not believe that manufacturers must, as a practical matter, determine their compliance with the timing requirement during their grade holding or draw bar testing. Instead, certification can easily be accomplished by using an engineering analysis of the vehicle's parking brake system or, if necessary, a test measuring the air pressure in the parking brake system to determine when the pressure reaches zero.

NHTSA has also considered the comments arguing that the agency has not demonstrated a need to change current brake systems and that the proposed requirement would result in additional certification burdens without any safety benefit.

As indicated above, the requirement being adopted is not expected to require changes in current brake systems. Spring brakes as well as the DD3 and Mini-Max parking brakes already achieve quick generation of parking retardation force. However, as new concepts in parking brake systems develop, the agency believes it is appropriate to ensure that such systems do not have significant delays in parking brake application and holding.

Effective Date

The amendments adopted by this notice require mandatory compliance effective September 7, 1988, while permitting manufacturers, effective April 11, 1988, to comply with the new requirements as an option to complying with requirements being superseded. Permitting optional compliance with amendments that become effective at a later date promotes manufacturer flexibility without creating any adverse impacts.

It is believed that all parking brakes currently being sold comply with the amendments being adopted. Since any necessary certification can be accomplished by engineering analysis and simple tests, 180 days provides a sufficient time for that purpose.

In consideration of the foregoing, 49 CFR Part 571 is amended as follows:

S5.6.3 of § 571.121 is revised to read as follows:

S5.6.3 *Application and holding.* Each parking brake system shall meet the requirements of S5.6.3.1 through S5.6.3.4, except that, at the option of the manufacturer, vehicles manufactured before September 7, 1988, may meet the requirements specified in S5.6.3.5.

S5.6.3.1 The parking brake system shall be capable of achieving the minimum performance specified either in S5.6.1 or S5.6.2 with any single leakage-type failure, in any other brake system, of a part designed to contain compressed air or brake fluid (except failure of a component of a brake chamber housing).

S5.6.3.2 For trucks and buses, with an initial reservoir system pressure of 100 psi and, if designed to tow a vehicle equipped with air brakes, with a 50 cubic inch test reservoir connected to the supply line coupling, at all times after three seconds from the time of actuation of the parking brake control, the parking brake system shall achieve the minimum parking retardation performance specified in S5.6.3.1. For trailers, with an initial supply line pressure of 100 psi and, if designed to tow a vehicle equipped with air brakes, with a 50 cubic inch test reservoir connected to the supply line coupling, at all times after three seconds from the time venting to the atmosphere of the front supply line connection is initiated, the parking brake system shall achieve the minimum retardation performance specified in S5.6.3.1.

S5.6.3.3 A mechanical means shall be provided which is capable, with zero air pressure and zero fluid pressure in the vehicle and without electrical power, of holding the parking brake application at a level meeting the minimum parking retardation performance specified in S5.6.3.1.

S5.6.3.4 For trucks and buses, with an initial reservoir system pressure of 100 psi and, if designed to tow a vehicle equipped with air brakes, with a 50 cubic inch test reservoir connected to the supply line coupling, no later than three seconds from the time of operation of the parking brake control, the mechanical means referred to in S5.6.3.3 shall be actuated. For trailers, with an initial supply line pressure of 100 psi and, if designed to tow a vehicle equipped with air brakes, with a 50 cubic inch test reservoir connected to the supply line coupling, no later than three seconds from the time venting to the atmosphere of the front supply line connection is initiated, the mechanical means referred to in S5.6.3.3 shall be actuated.

S5.6.3.5 *Optional requirement for vehicles manufactured before September 7, 1988.* The parking brake system shall be capable of achieving the minimum performance specified either in S5.6.1 or S5.6.2 with any single leakage-type failure, in any other brake system, of a part designed to contain compressed air or brake fluid (except failure of a component of a brake chamber housing). Once applied, the parking brakes shall be held in the applied position solely by mechanical means.

Issued on March 8, 1988

Diane K. Steed
Administrator

53 F.R. 7931
March 11, 1988

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 121 AIR BRAKE SYSTEMS

(Docket Nos. 70-27; Notice 29 and 83-07; Notice 4)

ACTION: Final rule.

SUMMARY: Before a vehicle is tested for compliance with most of the requirements of this agency's braking standards, the vehicle's brakes are broken-in by a series of brake applications. This break-in is called a burnish, and is intended to simulate the break-in that a vehicle's brakes would get when they are initially used on the public roads. With respect to heavy vehicles (those with a gross vehicle weight rating greater than 10,000 pounds), the burnish procedure now requires that the brakes be heated to not more than a specified maximum temperature by means of a series of brake applications.

The agency initiated rulemaking regarding this temperature limit because the limit is more favorable to drum brake designs than to disc brake designs. This situation arises because the limit was based on drum brake systems whose normal safe operating temperatures are significantly lower than those of disc brake systems. As a result, disc brake systems may not be adequately broken-in under the current burnish procedure.

To address this problem, this rule establishes a new burnish procedure for vehicles with a gross vehicle weight rating (GVNR) greater than 10,000 pounds. Under this new procedure, the vehicle will make 500 brake applications to slow the vehicle from 40 to 20 miles per hour (mph), without regard to the resulting temperature. This procedure will break-in brakes in a manner that is more realistic and representative of the break-in the vehicle brakes actually get when in service on the roads, without favoring any particular braking system design.

Since this new burnish procedure may affect the design and certification of new and existing braking systems, the agency believes it is appropriate to allow a transition period for implementing this new burnish procedure. Therefore, this rule allows manufacturers to base the certification of their heavy vehicle brakes on either the new or the old burnish procedures until September 1, 1993. In testing a vehicle for compliance, the agency will use the same procedures on which the manufacturer's certification of compliance was premised. All vehicles manufactured on or after September 1, 1993, will be burnished under the new burnish procedures set forth in this rule.

DATE: This rule is effective September 12, 1988.

SUPPLEMENTARY INFORMATION:

Background and Notice of Proposed Rulemaking

NHTSA has established two standards applicable to the braking systems on vehicles with a gross vehicle weight rating greater than 10,000 pounds. These two standards are Standard No. 105, *Hydraulic Brake Systems* (49 CFR §571.105) and Standard No. 121, *Air Brake Systems* (49 CFR §571.121). Standards No. 105 and 121 both specify road tests to measure the brake systems' compliance with the performance requirements. Both standards specify also that the brake systems on these heavy vehicles shall be "burnished" before undergoing road testing to determine if the brake systems satisfy the performance requirements of the applicable standard. The burnish is a series of brake applications that serve to "break-in" the brakes on a new vehicle.

Before the initiation of this rulemaking, the burnish procedure was as follows. The burnish consisted of a series of 500 brake applications at specified speeds. During the burnish procedure, the maximum temperature of the hottest brake on the vehicle was not permitted to exceed 550° F. The first 175 brake applications (hereinafter referred to as "snubs") were made so as to slow the vehicle from 40 miles per hour (mph) to 20 mph. Subsequent snubs were conducted at initial speeds that increase in increments of 5 mph until the final series of snubs brake the vehicle from 60 mph to 20 mph. However, if the maximum allowable brake temperature were reached at some speed less than 60 mph, the speed was not increased for the following snubs. The snub speed could even be reduced if such a reduction were needed to maintain the brake temperature below the specified maximum level.

Standard No. 121 also specifies a dynamometer test. The burnish for brake systems to be tested on the dynamometer specifies a series of 400 brake

applications from 40 mph, at a specified rate of deceleration. For these brake applications, Standard No. 121 specifies that the initial brake temperature shall be within a stated range. The initial brake temperature is defined in section S4 of Standard No. 121 as "the average temperature of the service brakes on the hottest axle of the vehicle 0.2 miles before any brake application."

The maximum brake temperatures during the road test burnish, which apply to both disc and drum brake systems, were based on SAE Recommended Practice J880, "Brake System Rating Test Code — Commercial Vehicles." This recommended practice was established in 1963, based solely on test data for drum brakes. One problem that became apparent with respect to the maximum burnish temperatures specified in the standards was that the specified maximum temperature may not have been appropriate for disc brake systems. Disc brake systems are generally designed to operate at appreciably higher temperatures than are drum brake systems. It has been difficult to avoid exceeding the specified 550° F maximum temperature during the burnish of vehicles with disc brake systems, even at the lowest of the burnish speeds set forth in the standards, i.e., 40 mph.

In response to this situation, International Harvester (IH) filed a petition for rulemaking with NHTSA. In its petition, IH asked the agency to amend the burnish procedures to take account of the differing characteristics of disc and drum brake systems. International Harvester has subsequently changed its corporate name to Navistar. However, all of the material in the public docket for this rulemaking action identify the company as International Harvester. To avoid potential confusion, this preamble refers to the company as International Harvester.

Notice of Proposed Rulemaking

After granting this petition, the agency published a notice of proposed rulemaking (NPRM) at 48 FR 29560; June 27, 1983. The NPRM proposed to amend the sections of Standards No. 105 and 121 applicable to burnish before road testing as follows. If the temperature of the hottest brake exceeded 550° F at a snub condition of 40 to 20 mph, the remaining snubs would be run from 40 to 20 mph without regard to the brake temperature. NHTSA anticipated that this proposed change would not create any compliance problems for existing drum brake systems, which do not typically exceed the specified temperature during burnish, while resolving the burnish problems that could occur for disc brake systems.

No change was proposed for the dynamometer burnish temperature in Standard No. 121 because the temperature problems which had arisen during the road test burnish had not occurred with respect to the dynamometer burnish. Accordingly, NHTSA saw no reason to propose changing that burnish procedure.

The NPRM also proposed some more minor revisions to the standards. One proposed change was intended to clarify the procedure for loading tractors and trailers during burnish testing. Another proposed change would have specified brake adjustments at equal intervals during the burnish. This change was proposed to ensure uniformity and repeatability of test results. The final proposed change involved automatic slack adjusters and automatic brake adjusters. Under the NPRM, both standards would have been amended to specify that brake systems equipped with such devices could not deactivate the devices during the testing for compliance with Standards No. 105 and 121.

The agency received seven comments on the NPRM. Motion Control Industries (Motion Control) suggested in its comments that NHTSA delete entirely the temperature restrictions during the burnish. In support of this position, Motion Control asserted that the existing burnish procedures do not sufficiently condition rear drum brakes on vehicles equipped with disc brakes on the front axle. This assertion was based on the fact that the temperature of the front disc brakes will exceed 550° F during the 40 to 20 mph snubs, and so the vehicle would not run any snubs at speeds in excess of 40 mph. The failure to condition the rear drum brakes at the higher snub speeds meant, according to Motion Control, that those drum brakes would not perform as well as they are designed to do during the compliance testing. Motion Control contended that if the friction materials in the brake systems are designed to stop vehicles from 60 mph while in service and are subjected to 60 mph stops during testing, it is desirable for the friction materials to experience whatever temperatures result from 60 mph stops during the burnish.

In a related vein, Ford Motor Company (Ford) stated that the amendment set forth in the NPRM would relieve the problems encountered by vehicles with disc brakes on all axles, but would not achieve its purpose for vehicles equipped with a

combination of disc and drum brakes. According to Ford's comment, "the procedure which would burnish the brakes most effectively on a vehicle equipped with a combination of disc and drum brake systems would be one which maintained the drum brake temperatures within the window of 450°-550° F, while allowing the disc brake temperatures to find their own level, unrestricted." This suggestion was similar to Motion Control's, in that no temperature restrictions would apply to disc brake systems. If the Ford suggestion were adopted, vehicles with disc brake systems on all axles would not be subject to any temperature limitations during the burnish procedure. However, the Ford suggestion would have retained the temperature limitations for drum brake systems.

After publication of the NPRM, NHTSA had conducted some testing to determine what burnish procedures would expose heavy duty vehicle brakes to sufficiently high temperatures to simulate a break-in of the brakes under normal driving conditions without favoring any particular design. That testing indicated that heavy duty vehicle brakes should be burnished by 500 snubs slowing the vehicle from 40 to 20 mph, without regard to the brake temperatures generated during the burnish. Such a burnish procedure exposes all types of brake systems to the temperatures they are likely to experience in city driving, without penalizing or favoring any particular type of brake design. Such a procedure would also be consistent with the burnish procedures specified by the Society of Automotive Engineers (SAE) for heavy duty vehicle brake performance testing; see SAE Recommended Practice J786a. (The burnish procedure in SAE Recommended Practice J880a, allowing snubs from 60 to 20 mph, is for a brake *energy absorption* test, not a brake *performance* test).

Supplementary Notice of Proposed Rulemaking

The agency wanted to give the public an opportunity to comment on the approaches suggested by Ford and Motion Control and the agency research, before proceeding to establish a final rule. Accordingly, NHTSA published a supplementary notice of proposed rulemaking (SNPRM) at 50 FR 21313; May 23, 1985. The SNPRM proposed four alternative methods for amending the burnish procedures. These were the Ford approach, the Motion Control approach, the approach suggested by the agency research, and the approach originally proposed in the NPRM with some minor changes.

Further, the SNPRM asked for additional comments on the minor amendments proposed in the NPRM. First, the NPRM had erroneously proposed the following conditions for burnishing the brakes of a truck tractor. As proposed, the truck tractor would be loaded to its gross vehicle weight rating and a trailer attached to the tractor would be loaded to its gross axle weight rating. However, the NPRM would have required that the control trailer be *unbraked*. Such loading would overtax the tractor's brakes during the burnish, since those brakes would be stopping far more weight than they were designed to stop. To correct this error, the SNPRM proposed to require that the combination of the tractor and the unbraked trailer be loaded only to the gross vehicle weight rating of the tractor.

Second, the NPRM had proposed that brake adjustments be made at specified intervals during the burnish procedure. Past interpretations and preambles had repeatedly stated that brake adjustments were permitted during burnish. To establish uniformity for both manufacturer and agency te ting as to when such adjustments would be made, the NPRM proposed that the brakes be manually adjusted at specified intervals. In the case of the road test burnishes, the adjustments would be made manually after 125, 250, and 375 snubs, in accordance with the manufacturer's recommendations. For the dynamometer test burnishes specified in Standard No. 121, the brakes would be adjusted manually after 100, 200, and 300 snubs.

General Motors (GM) objected to the proposed brake adjustment procedures in its comments on the NPRM. While acknowledging that manual adjustment might provide the most accurate adjustment, GM did not believe that manual adjustments would always be necessary. GM stated that, in most instances, use of the automatic brake adjustment feature in accordance with the manufacturer's recommendations would provide adequate adjustment.

NHTSA was persuaded by this comment. Accordingly, the SNPRM proposed that brakes shall be adjusted in accordance with the manufacturer's recommendations. If a vehicle manufacturer recommended manual adjustment for its brakes, the brakes would be so adjusted. Alternatively, if the manufacturer recommended that the brakes be inspected and adjusted only if necessary, that recommendation would be followed. If the

inspection showed that no adjustment to the brakes was necessary, none would be performed.

Third, several commenters to the NPRM objected to the proposed requirement to prohibit deactivation of automatic brake adjusters during testing for heavy vehicle's brake performance. These commenters argued that there was no valid reason to treat these heavy duty vehicles any differently than vehicles with GVWR's of 10,000 pounds or less. Since the lighter vehicles are allowed to deactivate automatic brake adjusters during testing, heavier vehicles should be offered the same option, according to these commenters.

NHTSA agreed with the implicit point of these comments that the reasons for and against permitting deactivation of automatic brake adjusters apply equally to all vehicles equipped with such devices, regardless of vehicle weight, size, or type. Since this rulemaking addresses only the question or heavy duty vehicles and the agency did not think it appropriate to address the deactivation of automatic brake adjusters in a piecemeal fashion, the SNPRM announced that the issue would be addressed in a separate rulemaking. Hence, this rulemaking no longer addresses the issue of deactivation of automatic brake adjusters.

In response to the SNPRM, 16 comments were submitted by 13 different commenters. All these comments were considered in connection with this final rule, and the most significant are discussed below.

Final Rule

Burnish Procedures

The SNPRM asked for comments on four alternative burnish procedures. In the SNPRM, the agency explained that its desired goal was to establish burnish procedures which represent driving conditions that would be encountered in normal use and which are fair for both types of brake systems (i.e., disc and drum brakes) while favoring neither. 50 FR 21315. Each of the four alternative procedures set forth in the SNPRM was evaluated to see how well it achieved this goal.

The approach suggested by Motion Control in its comments on the NPRM was to eliminate the maximum temperature requirements during burnish and simply run the snubs as specified in Table IV of Standards No. 105 and 121. None of the commenters to the SNPRM supported this approach. Lucas Industries Inc. (Lucas) stated that this approach would cause drum brakes to exceed 550° F in some circumstances during the burnish. Such temperatures would, according to Lucas, degrade the brakes' performance in subsequent tests. Chrysler agreed with Lucas, stating that an overly severe burnish can create excessive brake temperatures that substantially degrade or destroy the friction characteristics of the brake lining material. Accordingly, Chrysler urged that this approach not be adopted. The Bendix Division of Allied Automotive (Bendix) comment was substantially similar to Chrysler's on this alternative. Ford, IH, and General Motors commented that this alternative should not be adopted because it would not be representative of normal conditioning.

Motion Control itself stated that its suggested alternative would not be representative of normal brake conditioning and should not be adopted. However, Motion Control commented that the alternative would be acceptable if modified to require four 40-20 mph snubs followed by one 60-20 mph snub, repeated one hundred times for a total of 500 snubs. In support of this position, Motion Control tested a vehicle with front disc brakes and rear drum brakes according to this proposed modification. The testing showed that the front disc brakes would experience temperatures of 820° F during such burnish, while the rear drum brakes would be heated to 560° F at the end of this testing.

The agency agrees with the commenters that stated that the Motion Control approach as set forth in the SNPRM could potentially damage the brakes. Accordingly, such an approach would not satisfy the goal of establishing burnish procedures that are fair for both disc and drum brakes, nor would it be representative of the conditions encountered in normal driving. Therefore, this approach was not adopted in this final rule.

The Ford approach received some support in the comments. As noted above, the Ford approach set forth in the SNPRM would retain the 550° F temperature limitation for drum brakes during the burnish, but would eliminate temperature restrictions for disc brakes. Lucas supported this alternative, contending that it would burnish drum brakes on disc-drum combination vehicles under the same conditions as drum brakes would be burnished on vehicles using only drum brakes. Motion Control also stated that this alternative was the best for vehicles that used disc and drum brakes. Abex Corporation (Abex) stated that they supported the Ford approach, if the agency were going to amend the burnish procedures. Flxible

Corporation (Flxible) stated that brake temperatures in excess of 500° F cook the lining resin in drum brakes and reduce their performance. Because of this, Flxible stated that any alternative that retained such a limit for drum brake burnish was acceptable, including the Ford approach.

On the other hand, Chrysler, IH, Bendix, GM, and the Motor Vehicle Manufacturers Association (MVMA) opposed the Ford approach. These commenters believed that no temperature limits during the burnish of vehicles using only disc brake systems would potentially damage the disc brakes. Additionally, these commenters did not believe that this burnish procedure would be representative of normal driving. Ford itself agreed that some temperature limits should be added for disc brakes during the burnish, and suggested that its approach be adopted with an upper limit of 800° F for disc brakes. Both Bendix and MVMA commented that they would support the Ford approach, if a temperature limitation for disc brakes were added.

The approach suggested in the NPRM also received some support in the comments. Under this approach, vehicles would be burnished according to the schedule specified in Table IV, with a temperature limitation of 550° F for the hottest brake. However, if this temperature limitation were exceeded during the 40 to 20 mph snubs, all the remaining snubs would be run from 40 to 20 mph without regard to temperature. Chrysler stated that there was no need to change the burnish procedures, but if they were to be changed, the approach suggested in the NPRM was the best of the four alternatives listed in the SNPRM. IH commented that the NPRM's approach was the only acceptable alternative offered in the SNPRM. This belief was based on that approach giving the higher temperatures necessary to properly condition truck brakes and preserving the data history from compliance testing for the past 12 years.

However, Lucas opposed this approach, because rear drum brakes on a disc/drum vehicle would not be sufficiently conditioned when the front disc brakes reached a temperature of 550° F. Motion Control raised the same objection, and also stated that this approach would not be representative of normal conditioning, since it would not allow 60-20 mph snubs on disc/drum vehicles. Bendix opposed this approach, arguing that it would not adequately condition the front disc brakes on a vehicle using only disc brakes.

This final rule does not adopt either the Ford approach (limiting drum brake temperatures to 550° F) or the NPRM approach (limiting the hottest brake temperature to 550° F), because the agency has concluded that the brake temperatures that would be generated under either of these approaches would not be representative of the brake temperatures generated during normal driving conditions in the case of drum brake systems.

NHTSA has conducted a series of brake temperature tests for both hydraulically braked vehicles (DOT HS 806 860) and air braked vehicles (DOT HS 806 738) with gross vehicle weight ratings in excess of 10,000 pounds. These vehicles were driven in downtown traffic through Columbus, Ohio, and on the highways around that city. During this testing, the maximum temperatures measured for drum brakes were 410° F for one hydraulically braked vehicle and 350° F for the other hydraulically braked vehicle. The maximum temperature measured for drum brakes on air braked vehicles was 418° F. It should be noted that these maxima were measured for the rear axle of the tractor, and that the maximum temperatures measured for the other axles were significantly lower. Additionally, all of these maxima were recorded during the urban driving part of the testing. The brake temperatures measured on the highways were generally about 100° F less than the brake temperatures measured on the streets and roads of Columbus. These findings indicate that a burnish procedure that allows drum brakes to be heated to 550° F cannot be said to be representative of normal driving conditions.

Moreover, the findings in the NHTSA testing confirmed past research about brake temperatures. The University of Michigan Transportation Research Institute prepared a 1982 report entitled "Retarders for Heavy Vehicles: Phase II Field Evaluations." This report measured the average brake temperature for the drive axle of the tractor on five axle tractor-semitrailer combinations. This axle experienced the highest brake temperatures in the aforementioned NHTSA testing in Columbus, Ohio. These brake temperatures were measured after the vehicles had made a descent of the fairly long grades on US 40 and US 48 in the western part of Maryland. Under these demanding conditions, the average brake temperature on the tractor drive axles was less than 350° F.

Another 1982 report was prepared by Systems Technology Incorporated, entitled "The Development and Evaluation of a Prototype Grade Severity Rating System" (Report No. FHWA/RD-81/185).

This report also measured brake temperatures for five axle tractor-semitrailer combinations descending a grade. In this case, the grade was "the Grapevine" south of Bakersfield, California, on US 5. This is a well-known grade that features an average grade of 5.35 percent for 5.1 miles and presents heavy vehicle brakes with extremely demanding conditions. The brake temperatures of 25 vehicles were measured at the bottom of this grade. Even including the one vehicle that was a "runaway" because its brakes overheated, the average brake temperature for these vehicles was about 400° F.

Given these consistent research findings about the temperatures to which drum brakes are subjected during normal driving, the agency concludes that a burnish that subjects drum brakes to significantly higher temperatures cannot be said to be representative of normal driving conditions. By allowing the drum brakes to be heated to temperatures well in excess of those encountered during normal driving, the burnish procedures would ideally condition the drum brakes. However, the agency is more interested in the braking capability of vehicles when the brakes are in the condition they are most likely to be when used on the roads than in the maximum braking capability of a braking system if the brakes are ideally conditioned. Since neither the Ford approach nor the approach set forth in the NPRM would be representative of normal brake conditioning, neither approach has been adopted in this rule.

In the comments, only Ford submitted data to support its contention that drum brakes would experience temperatures near 550° F under normal driving conditions. Ford tested a fully loaded vehicle through the traffic of downtown Detroit, Michigan. This vehicle was hydraulically braked with a disc system on the front axle and drum brakes on the rear. Ford stated that the maximum temperature measured for the drum brakes was 459° F. Ford also submitted data measuring the brake temperatures for air braked vehicles driving through the mountainous part of Arizona. The maximum temperature measured for the drum brakes over this road was 507° F. However, Ford did not provide measurements of the initial brake temperatures or average brake temperatures or any other information that would allow the agency to further analyze the Arizona test data.

After considering the data submitted by Ford, NHTSA concludes that those data support the agency's conclusion that burnish procedures that allow drum brakes to be heated to 550° F do *not* represent conditions that will normally be encountered by vehicles in use. The Detroit testing showed what the prior research and the agency research had shown; i.e., drum brakes do not experience temperatures of 550° F under normal driving. With respect to the temperatures measured in the Arizona mountains, NHTSA does not doubt that it is possible to find grades long enough and severe enough to heat drum brakes to 500° F. However, the point of the burnish procedure is not to simulate every conceivable condition that the vehicle might experience while in use. Instead, the burnish procedure is intended to simulate a normal break-in for the vehicle's brakes. While such conditioning would improve the performance of the vehicle's brakes, the agency has no evidence that most, or even a significant number of, new vehicles are broken in by driving through rugged mountainous terrain. Accordingly, a burnish procedure that is intended to be representative of normal driving conditions should not be based on these abnormally high temperatures.

The approach suggested by the NHTSA research, i.e., making 500 snubs from 40-20 mph, is the final approach about which the SNPRM sought comments. After considering the intended function of the burnish procedures and all the comments received during this rulemaking action, NHTSA has selected this approach as the burnish procedure to be used for vehicles with a GVWR greater than 10,000 pounds. By making a series of braking applications from speeds encountered by every vehicle, this procedure will be most representative of normal driving conditions. Further, this procedure allows the brakes to reach whatever temperatures they are designed to reach when driven in typical stop-and-go driving. Thus, any braking system design will be conditioned fairly under this approach.

Among the commenters to the SNPRM, only Rockwell International (Rockwell) completely endorsed this approach. Rockwell cited three factors that favored this approach. These were:

1. It would give a constant rate of energy input to the brakes throughout the burnish, thus reducing variability associated with the original burnish procedure;

2. The schedule of energy input to the brakes would be in the center of most vehicle application duty cycles, as desired, thus producing a typical, real-world vehicle brake burnish and a cor-

respondingly realistic brake performance test; and

3. It would give all brakes the same burnish schedule, regardless of brake design or type, and should give an adequate burnish to each type of brake. Thus, all brakes would be on equal footing before starting the performance testing.

Renault USA Inc. (Renault) stated that it was "not sure" if this approach would give a sufficient burnish to brakes, especially when considering all of the vehicles to which this burnish procedure would apply. However, Renault asserted that the available data were not exhaustive, and recommended that the final rule give manufacturers the option of burnishing their brakes either under this approach or the approach set forth in the NPRM.

Bendix stated that its air braked disc systems reach the 550° F temperature limitations under the current procedures, so all 500 snubs are run from 40 to 20 mph for these vehicles. Flxible made a similar comment for its air braked drum brake systems on buses. These comments suggest that, at least for these manufacturers' braking systems, the new burnish procedures would not change the burnish from that which is specified under the current procedures.

NHTSA believes that another advantage of this approach is that it would not favor or disfavor any type of brake design. Whenever the burnish procedures include a maximum temperature limitation, brakes that are designed to operate nearest that temperature get a more extensive burnish than do brakes that are designed to operate at either a higher or lower temperature. For example, this rulemaking proceeding was initiated because the 550° F temperature limitation results in an unrealistic burnish for vehicles with disc brakes or both disc and drum brakes. That is because disc brakes are designed to operate safely at significantly higher temperatures than are drum brakes. Thus, it is necessary to amend this temperature limitation to account for the higher temperatures generated by disc brakes.

Additionally, Eaton Corporation (Eaton) noted in its comments that the air brake industry is in the process of converting from asbestos-based brake linings to non-asbestos brake linings on drum brake systems. These non-asbestos linings will generate different normal and safe maximum temperatures during brake applications than the asbestos-based linings currently offered. If a temperature limitation for the burnish procedure were specified in this rule, that limitation might need to be adjusted for various new brake linings and new brake systems, to account for changing characteristics.

Such repetitive rulemaking should be avoided. It continually diverts agency time and resources from more productive use. More importantly, it denies the public the early introduction of new technology, not because of any safety-related issues, but because it takes significant periods of time to amend the Federal motor vehicle safety standards.

For example, it is possible that a new design for braking systems would not be adequately or representatively conditioned by burnish at some specified maximum temperature, as a result of which the braking system would not satisfy the performance requirements of Standard Nos. 105 or 121. However, such a braking system would fully comply with those requirements if it were burnished in a manner that represented the break-in it would get during normal driving. Until the burnish procedures were amended, this braking system could not be installed on these heavy vehicles. Its introduction would be delayed solely because the temperature-restricted burnish procedures did not allow for the development of newer designs. NHTSA wants to avoid imposing such unnecessary impediments to the introduction of innovative systems.

A burnish procedure that requires 500 snubs from 40-20 mph avoids this pitfall. Under such a procedure, any new design will be burnished to whatever temperatures it is designed to experience during normal city driving. No additional rulemaking is required to ensure that the new design receives as effective and representative a burnish as do existing designs. Such a burnish procedure allows manufacturers to test and introduce innovative technologies without unnecessary and unintended delays.

However, the vast majority of commenters to the SNPRM objected to this approach. NHTSA stated in the SNPRM that preliminary examination of the results of 500 snubs from 40 to 20 mph indicated that such a burnish would expose all types of brake designs to the temperatures they would encounter in normal service without favoring any type of brake design. A number of commenters at least indirectly questioned this statement.

Lucas commented that this burnish procedure would not adequately burnish drum brakes on

some vehicles with low gross axle weight ratings. However, Lucas did not submit any data to substantiate this claim. Motion Control stated that when it burnished a vehicle with disc/drum brakes under this approach, the rear drum brake temperature was only 400° F. Motion Control asserted that this did not approach the necessary 500°-550° F for adequate burnish of these brakes. GM likewise stated that a vehicle with disc/drum brakes would not experience sufficiently high temperatures to adequately burnish either the front disc brakes or the rear drum brakes. GM also commented that this procedure would not adequately burnish certain all drum brake systems. Ford stated that its testing showed that burnish under this approach does not expose the brake linings of vehicles with disc/drum brakes to temperatures they would encounter in normal service.

NHTSA is not persuaded by these comments. Contrary to the implicit assertions of these comments, the purpose of the burnish procedure is not to guarantee that the vehicle's brakes will be exposed to a certain temperature. The agency concedes that this new burnish procedure may not expose current designs of drum brakes to temperatures of 500° F. The fact that drum brakes will not be exposed to temperatures as high as they were under the old burnish procedure does not, however, show that this burnish procedure is not an adequate burnish. As noted above, the burnish procedure is only intended to simulate the break-in of the brakes under normal driving conditions. The burnish is *not* intended to ensure that brakes will be ideally conditioned as a result of being exposed to unusually high temperatures they will rarely encounter while in service on the roads. The agency's testing indicated that a burnish consisting of 500 snubs from 40 to 20 mph will in fact expose the vehicle brakes to the temperatures those brakes would experience during stop-and-go urban driving. This finding leads the agency to conclude that such a burnish procedure would fairly represent the condition of brakes on vehicles that are in use on the nation's roads.

Only Ford submitted data to substantiate its assertion that this burnish procedure would not expose the brakes on vehicles with front disc brake systems and rear drum brake systems to the temperatures such brakes would experience in normal driving. These data were obtained from the aforementioned driving around the Detroit area. However, the agency does not agree with Ford's comment that its Detroit test shows that brakes would not be exposed to normal driving temperatures, and therefore would not be properly conditioned, during this burnish procedure. For the single vehicle that was used in the Detroit test, the rear drum brakes experienced average temperatures while driving around Detroit that were slightly less than the average temperatures measured during the burnish procedure. This fact supports the agency's conclusion that the burnish procedures set forth in this rule will expose the vehicle brakes to temperatures that are representative of the temperatures those brakes will experience in normal driving.

The front disc brakes on this vehicle did experience somewhat higher temperatures in the test than during the burnish procedure. However, disc brakes are often not as sensitive to burnish temperature as drum brakes. This is because the burnish temperature for disc brakes appears to have little effect on the torque output of the brakes after burnish, provided that the burnish temperature reaches at least 500° F. In Appendices B, C, and F to NHTSA's research on hydraulically braked vehicles (DOT HS 806 8602-864), disc brakes on three different vehicles reached temperatures of 500°, 600°, and 700° F during burnish, but all showed comparable performance improvements after the burnish. Hence, even if the front disc brakes did not experience quite as high an average temperature during burnish as they did during urban driving, they did experience sufficiently high temperatures during burnish to simulate the "break-in" process.

Other commenters asserted a position which was somewhat contradictory to the above comments. Chrysler and Bendix were opposed to this burnish procedure, because it did not specify any maximum temperature to which the brakes could be exposed during burnish. These commenters stated that the burnish procedure had to specify some reasonable maximum temperature requirement to avoid damaging the brakes. The agency would like to note that any brakes that are designed so that they will be damaged while making 40 to 20 mph snubs probably should not be installed on new vehicles regardless of any applicable regulatory provisions. Regardless of the brake type, this burnish procedure will ensure that all brakes are exposed to whatever temperatures they will be exposed to during normal break-in when operated on the public roads.

Ford, IH, and MVMA all stated in their comments that NHTSA's testing of a limited sample of vehicles over a single route does not adequately duplicate the range of brake lining temperatures

experienced by the large variety of vehicles with GVWR's over 10,000 pounds operating over all possible driving cycles. The agency disagrees with the suggestion that the sample of vehicles for the Columbus, Ohio, tests was not representative. This sample included vehicles with widely varying GVWR's and with all current combinations of brake systems. None of these commenters pointed to a particular vehicle weight class or braking system that was not included in this sample, and the agency believes that its sample was broad enough to adequately represent these vehicles.

NHTSA agrees that there are driving cycles such as frequent driving on grades that would generate higher brake temperatures than city driving. However, the agency was not seeking to establish a burnish procedure to simulate the most demanding conditions these vehicles would face in the real world or a burnish procedure that ideally conditions all brake designs. Instead, the agency wants to establish a burnish procedure that simulates normal "break-in" for vehicle brakes. Stop-and-go city driving generates significantly higher brake temperatures than highway driving, primarily because of more frequent brake applications. This type of driving was chosen as the one the burnish should simulate, because it is a demanding type of driving for all braking systems, and it is likely to be generally and frequently experienced by the braking systems on heavy vehicles. NHTSA concluded that a burnish procedure based on city driving would expose vehicle brakes to temperatures they will encounter in the real world and represent the break-in for those brakes in the real world. A more demanding driving cycle would not be representative of normal break-in for the vast majority of vehicles on the road. A less demanding driving cycle would not expose the vehicle brakes to the conditions those brakes will encounter when in service. Therefore, the urban driving cycle was selected as the one the burnish should represent.

Abex commented that this burnish procedure would pose an additional problem. According to this commenter, without brake temperature data, it will be difficult to ensure any consistency of burnish conditioning from one test to another. First, nothing about the new burnish procedure prevents manufacturers from recording brake temperature data if they wish to do so. Second, this procedure will yield a constant rate of energy input to the brakes throughout the test, because all of the braking applications will be from 40 to 20 mph. That will ensure greater consistency of burnish conditioning from one test to another than the old burnish procedure. This is because the old burnish procedure was based on brake temperature. As noted in the comments of GM, IH, MVMA, and others, the brake temperature fluctuates greatly during the burnish, rising as much as 300° F during a brake application. These sharp temperature rises make it very difficult to ensure consistent conditioning from one burnish to another, if maximum temperature is the controlling factor.

Abex also commented that Standard No. 105 includes 60 mph stopping distance requirements. Since the brakes will be tested for performance from 60 mph, Abex urged that the brakes should also be burnished from this speed. Motion Control made a similar comment. These comments are not persuasive. In both the preburnish and postburnish tests, Standard No. 105 specifies that vehicles with a GVWR greater than 10,000 pounds must stop from 60 mph in 388 feet. NHTSA notes that the service brake stopping distance requirements of Standard No. 105, to which both these commenters referred, are not currently in effect for vehicles with a GVWR greater than 10,000 pounds. Even if the service brake stopping distance requirements were in effect for these vehicles, the braking performance is *not* required to improve after burnish. Since Standard No. 105 only requires that the brakes on these vehicles retain the effectiveness they had before burnish, there is no reason to subject the vehicles to repeated 60 mph snubs during the burnish. Given the current requirements of the standard, the result of permitting 60 mph snubs would appear to be to raise the brake temperatures to unrealistically high levels.

Ford, GM, MVMA, and IH all commented to the effect that this new burnish procedure would lower the brake temperatures experienced by drum brakes during the burnish. According to these commenters, the lower temperatures would affect the static and dynamic performance of the brakes on the vehicles, which, in turn, would require a redesign of the brake systems on certain vehicles.

Since this new burnish procedure more effectively simulates normal break-in of these vehicles' brakes while in service on the roads, the braking performance measured for those vehicles in the performance tests for Standards No. 105 and 121 should now more accurately reflect the vehicles' braking performance while in service. The agency has no reason to believe that any vehicles currently

being produced will not comply with Standards No. 105 or 121 after being burnished in accordance with these new procedures. Moreover, none of these commenters submitted data that supports their assertions.

MVMA simply stated that certain vehicles' braking systems would have to be redesigned as a result of this new burnish procedure. Without some data and examples of specific vehicles, NHTSA was unable to analyze this comment further. GM stated that its analysis of Standard No. 121 compliance data for some of its air braked transit buses with drum brake systems would be insufficiently burnished under this new procedure. As a result, GM stated that the buses' postburnish stopping distance would be increased to a level unacceptable to GM. It should first be noted that the stopping distance requirements of Standard No. 121 applicable to air braked buses have been suspended. Hence, there are *no* stopping distance requirements currently in effect for air braked buses. Even if there were stopping distance requirements in effect for air braked buses, GM did not assert that its transit buses would not comply with those requirements of Standard No. 121. Presumably GM meant to say that the performance of its buses would exceed the minimum performance requirements by a margin that was too small to be acceptable to GM. If a more representative burnish procedure results in GM's products not meeting GM's own product standards for the amount by which the product's performance should exceed the requirements of Standard No. 121, any redesign of the buses' braking system would be a result of the GM product standards, not Standard No. 121. To the extent that this new burnish procedure more accurately represents the break-in those buses' brakes actually receive while in service, it would also give GM a more accurate representation of how well those brakes will perform while in service. If vehicle manufacturers are not getting an accurate representation of how their vehicle braking systems perform when used by the public from the current burnish procedure, that is yet another reason to adopt the new burnish procedure.

Ford submitted data purporting to show that one of its vehicles with hydraulic disc and drum brakes would no longer comply with the requirements of section S7.9 of Standard No. 105, if it were burnished according to this new procedure. That section of Standard No. 105 requires the vehicle to stop from 60 mph in a specified distance even if the vehicle experiences a partial service brake failure. With respect to vehicles with a GVWR greater than 10,000 pounds, Table II of Standard No. 105 specifies that such vehicles must stop in 613 feet from 60 mph with a partial service brake failure. Ford submitted data showing that the longest stopping distance for its vehicle was 737.5 feet and the average stopping distance was 626.3 feet.

However, Ford did not note that S7.9 requires only that the vehicle stop in 613 feet in *one* of the four required stops with a partial service brake failure. Since Ford's longest stopping distance for this condition was 737.5 feet and the average stopping distance for the four stops was 626.3 feet, the average of the other three stopping distances was 589.23 feet. This average is well within the required 613 feet maximum distance. Therefore, NHTSA does not believe that Ford's data support its asserted compliance problems.

To the extent that Ford's data were intended to show a reduction in the after burnish performance capabilities of the truck to a level unacceptable to Ford, the agency responds in the same way as it did to GM's comment on this point. That is, the data show that the vehicle complies with Standard No. 105. If the amount by which the vehicle exceeds that minimum performance requirement is unacceptable to Ford, any redesign of the braking system is a result of Ford's product standards, not Standard 105. Further, if the new burnish procedure gives Ford a more accurate representation of how well its braking system performs when in service on the public roads, that fact supports the agency's decision to implement the new burnish procedures.

IH commented that the changed burnish procedure would cause it to have compliance problems with section S5.6.1 of Standard No. 121. That section requires that the static retardation force produced by the parking brakes alone shall be such that the quotient of the static retardation force/GVWR is not less than 0.14. According to IH, under the current burnish procedure, this requirement means that it can use parking brakes on just one axle of a truck tractor unless the GVWR of the tractor is greater than 56,000 pounds. For tractors with a GVWR over 56,000 pounds, International Harvester must use parking brakes on two axles. However, International Harvester stated that under the new burnish procedure, it would have to install parking brakes on two axles of tractors with a GVWR over 46,000

pounds. According to the commenter, this will add costs and system complexity to tractors with GVWR's between 46,000 and 56,000 pounds.

International Harvester did not provide enough information for the agency to fully evaluate this comment. Most notably, the comment does not indicate whether the entire Standard No. 121 test sequence was run prior to the parking brake force measurements. Agency compliance testing of the parking brakes is conducted only after conducting service brake testing. If the 60 mph loaded vehicle service brake tests, which help condition the brakes, were not run prior to the parking brake force measurements, the parking brake force measurements are probably lower than they would have been had the complete Standard No. 121 compliance testing been conducted.

Assuming that International Harvester did conduct the full Standard No. 121 testing for this vehicle, the agency has no reason to believe that parking brakes should not be required on two axles of tractors with a GVWR of more than 46,000 pounds. If the International Harvester data are correct, the parking brakes on one axle of such tractors cannot provide a retarding force of 0.14 even when properly adjusted, if the brake linings are conditioned as they most likely would be when in service. A retarding force of 0.14 is roughly the equivalent of a 14 percent grade. If NHTSA accepts the commenter's conclusion that the new burnish procedure results in a 17 percent reduction in parking brake force, and the new burnish procedure more accurately represents the normal condition of brake linings in use on the roads, the parking brakes of some tractors with a GVWR of 55,000 pounds now being used on the public roads are only capable of holding on an 11.7 percent grade. If true, this comment raises concerns as to how well the parking brakes perform for vehicles currently in service. It also lends support to the agency's decision to implement burnish procedures that are more representative of the conditioning brakes get while in service.

Eaton, IH, and MVMA commented that a change to the burnish procedures should not be adopted, because any change would make obsolete 12 years of accumulated test data. These comments do not directly challenge the agency's conclusion that the new burnish procedures will be far more representative of the break-in that most brakes get while in service on the highways. Neither does this reasoning challenge the agency's conclusion that this new burnish procedure will not favor any new or future brake system designs. Instead, these comments urge the agency to retain a temperature-restricted burnish procedure because that is what the agency has used in the past. NHTSA does not agree that it should continue to require a burnish procedure that favors older brake designs and is not representative of real-world conditioning of brakes, simply because it has done so in the past. Indeed, it appears to be a far more responsible course of action to acknowledge the problems of the old burnish procedure and try to correct those problems in a new burnish procedure at a time when there are *no* service brake stopping distance requirements in effect for hydraulically braked heavy trucks subject to Standard No. 105, and when there are *no* service or emergency brake stopping distance requirements in effect for air braked vehicles subject to Standard No. 121.

Notwithstanding the agency's disagreement with the direct point of these comments, NHTSA believes that the implicit point of these comments is convincing. The agency reads these comments to imply that NHTSA ought to allow the manufacturers sufficient time to develop a new data bank using the new burnish procedures before mandating that vehicles be certified as complying with braking standards that incorporate these new burnish procedures. NHTSA believes that this is a legitimate concern that must be addressed in this rulemaking. The same point was indirectly raised in the International Harvester and MVMA comments that these new burnish procedures will require retesting of some vehicle's braking capabilities to ensure continuing compliance with the applicable standard.

The agency agrees that it must fully consider the economic impacts of a new burnish procedure, and should minimize those impacts when that is possible. This is particularly true in this rulemaking. This new burnish procedure is not intended to impose additional performance requirements for heavy vehicles in response to a demonstrated safety problem. Rather, the new burnish procedure is intended to ensure that vehicles are tested for compliance with the existing performance requirements when the brakes are conditioned to the same extent that brakes are typically conditioned when used by the public on our nation's roads, and to eliminate the current disfavoring of new brake designs from the burnish procedures. Given these purposes, the agency can and should minimize the economic impacts associated with the transition to a new burnish procedure.

Accordingly, this rule includes a transition period until September 1, 1993. During this period,

heavy vehicles may be burnished under the old or new burnish procedures, at the manufacturer's option, before compliance testing. For this transition period, the old burnish procedures have been modified in accordance with the approach taken in the NPRM for this rulemaking. That is, vehicles will be subjected to 500 snubs for the burnish according to the schedule set forth in Table IV. However, if the temperature of the hottest brake exceeds 550° F, the snubs shall be adjusted to a lower speed as necessary to maintain a hottest brake temperature of 550° F. If the hottest brake temperature exceeds 550° F at the lowest snub condition set forth in Table IV (40 to 20 mph), the remainder of the snubs shall be run from 40 to 20 mph without regard to brake temperature. This change has been made to accommodate disc brake systems, which are designed to operate safely at temperatures in excess of 550° F. Since this problem was the issue this rulemaking was initiated to address, it is appropriate for the agency to address this problem now instead of waiting for the end of the transition period.

The agency believes that this transition period will effectively minimize any adverse economic impacts associated with the change to a new burnish procedure. It will allow manufacturers to specifically identify any vehicles whose braking system would not comply with the performance requirements of Standard Nos. 105 and 121 using the new burnish procedures. If only a few isolated vehicles are affected, the transition period will give the manufacturers sufficient time to make appropriate design changes to those vehicles. If, on the other hand, the new burnish procedures will necessitate major design changes to almost all vehicles now in production, or result in some other adverse economic consequences of which the agency is now unaware, the transition period would allow the agency time to make appropriate regulatory changes to avert such unintended economic impacts. Further, this transition period would enable the manufacturers to gather a data bank of testing under the new burnish procedures before those procedures are mandated, as urged in the Eaton, IH, and MVMA comments.

Tractor-Trailer Loading During Burnish

As noted above, the SNPRM proposed that the unbraked trailer used to test the braking performance of truck tractors would be loaded so that the combined weight of the tractor-trailer combination is equal to the GVWR of the tractor. Abex supported this proposal.

However, Ford, IH, Bendix, and MVMA opposed this proposal in their comments. They explained that their objection was based on the fact that the proposed change appears to *require* the use of a trailer during the testing of a truck tractor's brakes. These commenters stated that most tractor manufacturers use load racks, instead of trailers, during such testing. These load racks simulate the weight that a trailer would place on the tractor. The commenters stated that a new requirement that tractor manufacturers use actual trailers during testing was unnecessary. Since the commenters believed that the agency's intent was to prevent overloading of trailers *if* trailers were used for testing, they suggested that the language of the rule be amended to more accurately reflect such intent.

NHTSA believes that these comments reflect a misunderstanding of the compliance test procedures set forth in the Federal motor vehicle safety standards. The use of the word "shall" in the compliance test procedures means that the agency, *and no other party*, is required to use an unbraked flatbed semitrailer during its compliance testing for truck tractors. When specifying its compliance testing procedures in any of the safety standards, the agency is required by the National Traffic and Motor Vehicle Safety Act ["the Safety Act"; 15 U.S.C. 1381 *et seq.*] to specify those procedures in "objective terms." 15 U.S.C. 1392(a). One aspect of the requirement that a compliance test procedure be stated in objective terms is that the procedures must, to the maximum extent possible, eliminate potential sources of variability in test results.

In this particular case, the agency has no reason to believe that load racks do not provide an accurate simulation of the loading imposed on a truck tractor by a trailer during the burnish procedures, because it is the total load that effects the burnish and not the load distribution (provided that each axle is loaded sufficiently to protect against wheel lock and the vehicle is not equipped with a load proportioning valve). However, the agency also has no data to support its belief that load racks would yield burnish results identical to those that are obtained with an unloaded trailer. Hence, a provision that the agency could use load racks in its compliance testing *might* introduce variability into these standards. The only way to learn whether the use of load racks during the burnish procedures *would* introduce variability into the standards would be for the agency to spend a substantial amount of its research time and dollars investigating this subject. NHTSA believes that such an expenditure of its research

efforts for a project that would have no obvious safety benefits would be unjustified. Therefore, the agency has chosen to draft this final rule so that it does not introduce any potential source of variability, by simply specifying that an unbraked flatbed semitrailer will be used by NHTSA in its compliance testing.

This decision need *not* increase testing costs for the manufacturers. It is worth noting that manufacturers are not even required to conduct testing before certifying that these vehicles comply with these standards, provided that they exercise "due care" in making such certifications, as provided in section 108(a)(1)(C) of the National Traffic and Motor Vehicle Safety Act [15 U.S.C. 1397(a)(1)(C)]. If manufacturers choose to conduct testing in accordance with the compliance test procedures, they are free to simulate any or all parts of the test procedures. If the agency tests reveal a noncompliance, the agency's consideration of the appropriateness of a civil penalty will necessarily include the issue of whether such simulations are reasonable enough to satisfy the "due care" standard.

In this particular case, let us assume that a truck tractor manufacturer has chosen to conduct testing prior to certifying compliance and has employed a load rack during the burnish procedure. Let us also assume that the manufacturer's testing showed that the tractor complied with the standard and the manufacturer so certified. If NHTSA should subsequently conduct compliance testing for the tractor, the agency would burnish the tractor using a trailer. Finally, let us assume that the testing showed that the individual tractor being tested did *not* comply with the braking standards.

In these circumstances, NHTSA would follow its longstanding and well-known enforcement policy of notifying the manufacturer of the agency's test results and asking the manufacturer for further information. In response, the manufacturer would provide the results of its compliance testing to the agency, together with its reasons for concluding that a load rack is a reasonable simulation for a trailer during burnish. To support an argument that its own tests actually demonstrate compliance or to show that it exercised due care in its substitution of a load rack for a trailer during burnish, the manufacturer would also submit the bases for its conclusion that a load rack is a reasonable simulation of a trailer for the purposes of the burnish.

At this point, the agency would carefully analyze the manufacturer's response. If the agency concludes that the difference in test results can be explained to the agency's satisfaction, that the agency's results do not indicate an unreasonable risk to safety, and that the manufacturer's tests were reasonably conducted and were in general conformity with the standard, the agency would consider whether its own test results would support a determination of noncompliance. These enforcement practices have long been a matter of public record.

Of course, a manufacturer that could show that it exercised due care in making its certification would still be subject to the statutory obligation to recall and remedy its vehicles that do not conform to the requirements of Standard Nos. 105 or 121, assuming that the agency or the manufacturer makes a determination that the vehicles did not comply with the applicable standard. However, this same obligation would apply even if the manufacturer had conducted full compliance testing and used a flatbed semitrailer to burnish its tractors.

Thus, the agency does not believe that the amendment requiring NHTSA to burnish tractors using flatbed semitrailers necessarily puts manufacturers at risk of a civil penalty solely because they chose to use load racks during tractor burnish, *unless* the manufacturer had no reason to believe that a load rack was an adequate simulation of a trailer. If this were the case, the manufacturers' comments that they should be allowed to continue using load racks during burnish would have no merit. However, NHTSA does not understand the commenters to be making such an assertion, and has no reason to question the representativeness of load racks during the burnish procedures. Therefore, this rule adopts the tractor loading requirements during burnish that were proposed in the SNPRM.

In this same vein, the agency would like to point out that this final rule does not adopt a proposed change to section S6 of Standard No. 121. That proposed change would have allowed final stage manufacturers to "demonstrate compliance" with Standard No. 121, if the final stage manufacturer adhered to the instructions provided with the vehicle by the incomplete vehicle manufacturer and any intermediate stage manufacturer of the vehicle. The proposed language erroneously conveys the impression that the statutory and regulatory requirements for notification and remedy of noncomplying vehicles would not be applicable if a final stage manufacturer could show that it had

adhered to the instructions provided with the incomplete vehicle by the incomplete vehicle manufacturer and any intermediate stage manufacturers.

What the proposed language was intended to do was to make clear that a final stage manufacturer can demonstrate compliance with the statutory requirement that it exercise due care in making certifications of compliance with Standard No. 121, if the final stage manufacturer can show that it adhered to the instructions provided with the incomplete vehicle by the incomplete vehicle manufacturer and any intermediate stage manufacturers. However, such a provision is redundant. 49 CFR §567.5 and 49 CFR §568.6 already permit the final stage manufacturer that has adhered to the instructions provided with the incomplete vehicle to so state, and rely on its adherence to the instructions provided with the incomplete vehicle as the basis for its certification of the vehicle. Since these regulatory requirements make clear that any final stage manufacturers satisfy "due care" responsibilities for certification when they adhere to the instructions furnished with the incomplete vehicle, it is unnecessary to add a similar requirement to Standard No. 121. Therefore, this proposed change is not incorporated in this final rule.

Brake Adjustments During Burnish

The SNPRM proposed that the brakes shall be adjusted in accordance with the manufacturer's recommendations at specified intervals during the burnish procedure. As explained in the SNPRM, if a manufacturer recommends that brakes be inspected first and adjusted only if necessary, that recommendation would be followed. If the inspection were to show that no adjustment was necessary, none would be performed.

This change was proposed because past interpretations and preambles have repeatedly stated that brake adjustments are permitted during burnish. Since these adjustments are permitted, it is necessary that the compliance test procedures specify how often and when the adjustments will be made. Otherwise, the standards would incorporate a potential source of variability, and would give rise to the problems described above in the *Tractor-Trailer Loading During Burnish* section.

Ford commented that it had no objections to the brake adjustment provisions proposed in the SNPRM. MVMA commented that it agreed with the proposed brake adjustment provisions.

However, Lucas disagreed with the proposal. It commented that brake adjustments should only be required during burnish if such adjustments are necessary to obtain the specified rate of deceleration during the burnish. The agency did not propose or intend to *require* brake adjustments unless the manufacturer recommends them at that time. If the vehicle manufacturer recommends that the brakes be inspected and adjusted only if certain conditions exist, the brakes will *not* be adjusted unless those conditions exist. Therefore, if Lucas desires that its brakes not be adjusted unless certain conditions exist, it should recommend that the brakes be inspected and adjusted only if those conditions exist. Such a recommendation would accomplish Lucas's goal without making any change to the proposed requirement. Hence, no change to the proposed language has been made in response to this comment.

Abex also objected to this proposed requirement in its comments. Abex stated that regulating adjustments during burnish was, in its opinion, "unwarranted." The comment went on to state that, "We are not aware of any problems that have been encountered with the current procedure which does not control either the number of adjustments that can be made or the specific points during burnish where they can be made." As explained above and in the SNPRM, the reason for proposing this requirement was to establish uniformity and specificity for the agency's compliance test procedures. The need for uniformity and specificity are sufficiently compelling in the agency's judgment to warrant these provisions.

Abex continued by stating that many dynamometers have automatic controls, which means the manufacturers can conduct the burnish procedures "essentially unattended." The commenter stated that this feature allows manufacturers to frequently conduct the dynamometer burnish through the night or during weekends. According to Abex, if the agency requires manufacturers to make adjustments at specified times and intervals, the requirement will slow up the burnish, increase labor costs, or both.

As discussed above in the section on tractor-trailer loading during burnish, NHTSA is *not* requiring the manufactures to follow these procedures for any testing they choose to conduct. These are the procedures the agency will follow during its compliance testing. As long as the manufacturer exercises due care in connection with the testing it conducts, it would satisfy its statutory obligations in connection with certifications. Abex apparently has reason to believe that brake adjustments are

not necessary during dynamometer burnish, since it does not make such adjustments at present. Assuming that Abex's reasons are sufficient to establish that it exercised due care before certifying that its brakes complied with this requirement, *or* if Abex recommends no brake adjustments during burnish, Abex will not have to change its current testing practices under this new regulatory provision. If, on the other hand, Abex has insufficient reason for concluding that no brake adjustment is necessary during dynamometer testing, Abex should change its practice irrespective of any changes to the compliance test procedures. Therefore, the agency has concluded that the establishment of timing and frequency requirements for brake adjustment during burnish in the agency's compliance tests need not increase the costs or time required for any testing manufacturers choose to conduct. These requirements are adopted as proposed.

Regulatory Impacts

A. Costs and Benefits to Manufacturers and Consumers.

NHTSA has analyzed this rule and determined that it is neither "major" within the meaning of Executive Order 12291 nor "significant" within the meaning of the Department of Transportation regulatory policies and procedures. The main impact of this rule will be to provide burnish procedures that are more representative of the actual "break-in" that vehicles' brakes typically receive while in use on the nation's roads, without favoring any particular braking system design. As noted above, there are no stopping distance requirements currently in effect for service brakes on hydraulically braked vehicles, and no stopping distance requirements in effect for either service brakes or emergency brakes on air braked vehicles. Hence, these new burnish procedures will not affect certifications of compliance by manufacturers of those braked systems.

It is possible that the new burnish procedures could affect certifications of compliance with applicable stopping distance requirements for parking brake systems. The extent to which the changed burnish procedures will affect those certifications is uncertain. No commenter submitted evidence that any complying parking brake systems will no longer comply as a result of the change in burnish procedures. To address this possibility, however, this rule provides for a five year transition period to the new burnish procedures may continue to certify vehicles using the old burnish procedures. At the same time, the manufacturers can can experience with the effects of the new burnish procedure's effect on the performance of their braking systems. The transition period will allow time for the manufacturers to make appropriate changes to their braking systems in an orderly fashion, and at minimal cost. Because the agency anticipates that this rule will have only minimal economic impacts, it has not prepared a full regulatory evaluation.

B. Small Business Impacts.

The agency has also considered the impacts of this rule as required by the Regulatory Flexibility Act. I hereby certify that this rule will not have a significant economic impact on a substantial number of small entities. Few of the truck tractor manufacturers affected by this burnish procedure are small entities. Many of the trailer manufacturers may qualify as small entities. However, this rule will not significantly increase the production or certification costs for those manufacturers that do not qualify as small entities. There are currently no stopping distance requirements applicable to trailers. Thus, these new burnish procedures will not make it more difficult for small manufacturers of trailers to certify compliance with service brake stopping distance requirements. Standard 121 specifies parking brake requirement for air braked trailers, but trailer manufacturers, except possibly the largest trailer manufacturer who also makes brakes, usually depend on their brake manufacturer to provide the information necessary for certification to the parking brake requirements. Accordingly, any inceased certification burden for parking brake systems that might be associated with this new burnish procedure would be borne by brake manufacturers (which generally do not qualify as small entities) and the large trailer manufacturers. Small organizations and governmental jurisdictions will be affected as purchasers of these vehicles. However, the cost impacts of this rule will be minimal, as described above. Accordingly, a regulatory flexibility analysis has not been performed.

C. Environmental Impacts

NHTSA has considered the environmental implications of this rule, in accordance with the

National Environmental Policy Act, and determined that it will not significantly affect the human environment. Accordingly an environmental impact statement has not been prepared.

List of Subjects in 49 CFR Part 571

Imports, Motor vehicle safety, Motor vehicles, Rubber and rubber products, Tires.

In consideration of the foregoing, 49 CFR 571.105, *Hydraulic Brake Systems*, and 49 CFR 571.12, *Air Brake Systems*, are amended as follows:

PART 571 - *FEDERAL MOTOR VEHICLE SAFETY STANDARDS*

The authority citation for Part 571 continues to read as follows:

Authority: 15 U.S.C. 1392, 1401, 1403, 1407; delegation of authority at 49 CFR 1.50.

§571.105 *Standard No. 105: Hydraulic brake systems.*

1. S7.4.2 of §571.105 is amended by revising S7.4.2.1 and S7.4.2.2 to read as follows:

S7.4.2 *Vehicles with GVWR greater than 10,000 pounds.*

S7.4.2.1 *Burnish.* Vehicles manufactured before September 1, 1993, may be burnished according to the procedures set forth in S7.4.2.1(a) or S7.4.2.1(b) of this section, at the manufacturer's option. Vehicles manufactured on or after September 1, 1993, shall be burnished according to the procedures set forth in S7.4.2.1(b) of this section.

(a) Burnish the brakes by making 500 snubs at 10 fsps in the sequence specified in Table IV and within the speed ranges indicted. Except where an adjustment is specified, after each brake application accelerate to the next sped specified and maintain that speed until making the next brake application at a point 12 mile from the initial point of the previous brake application. If a vehicle cannot attain any speed specified in 1 mile, continue to accelerate until the specified speed is reached or until the vehicle has traveled 1.5 miles from the initial point of the previous brake application, whichever occurs first. If during any of the brake applications specified in Table IV the hottest brake reaches 550° D, make the remainder of the 500 brake applications from that snub condition, except that a higher or lower snub condition shall be followed (up to the 60 mph initial speed) as necessary to maintain a hottest brake temperature of 500° F ± 50° F. However, if at a snub condition of 40 to 40 mph, the temperature of the hottest brake exceeds 550° F, make the remainder of the 500 brake applications from that snub condition, without regard to brake temperature. The brakes shall be adjusted three times during the burnish procedure, in accordance with the manufacturer's recommendations after 125, 250, and 375 snubs.

TABLE IV

Series	Snubs	Snub conditions (highest speed indicated, miles per hour)
1	175	40-20
2	25	45-20
3	25	50-20
4	25	55-20
5	250	60-20

(b) Burnish the brakes by making 500 snubs between 40 mph and 20 mph at a deceleration rate of 10pfps. Except where an adjustment is specified, after each brake application accelerate to 40 mph and maintain that speed until making the next brake application at a point 1 mile from the initial point of the previous brake application. If the vehicle cannot attain a speed of 40 mph in 1 mile, continue to accelerate until the vehicle reaches 40 mph or until the vehicle has traveled 1.5 miles from the initial point of the previous brake application, whichever occurs first. The brakes shall be adjusted three times during the burnish procedure, in accordance with the manufacturer's recommendations after 125, 250, and 375 snubs.

S7.4.2.2 *Brake adjustment - post burnish.* After burnishing, adjust the brakes in accordance with the manufacturer's recommendations. *****

2. S7.6 of §571.105 is revised to read as follows:

S7.6 *First reburnish* Repeat S7.4, except make 35 burnish stops or snubs In the case of vehicles burnished in accordance with S7.4.2.1(a) of this section, reburnish the vehicle by making 35 snubs from 60 to 20 mph, but if the hottest brake temperature reaches 500° F ± 50° F, make the remainder of the brake applications from the highest snub condition listed in Table IV that will maintain the hottest brake temperature at 50° F ± to° F. If at a snub condition of 40 to 20 mph, the temperature of the hottest brake exceeds 550° F, make the remainder of the 35 brake applications from that snub condition without regard to brake temperature.

§571.121 *Standard No. 121: Air brake systems.*

3. S6 of §571.121 is revised to read as follows:

S6 *Conditions.* The requirements of S5 shall be met by a vehicle when it is tested according to the conditions set forth below, without replacing any brake system part or making any adjustments to the brake system except as specified. Except as otherwise specified, where a range of conditions is specified, the vehicle must be capable of meeting the requirements at all points within the range.

4. S6.1 of §571.121 is amended by revising S6.1.1 and S6.1.8.1 to read as follows:

S6.1 *Road test conditions.*

S6.1.1. Except as otherwise specified, the vehicle is loaded to its gross vehicle weight rating, distributed proportionally to its gross axle weight ratings. During the burnish procedure specified in S6.1.8, truck tractors shall be loaded to their GVWR by coupling them to an unbraked flatbed semitrailer, which semitrailer shall be loaded so that the weight of the tractor-trailer combination equals the GVWR of the truck tractor. The load on the unbraked flatbed semitrailer shall be located so that the truck tractor's wheels do not lock during burnish. * * * * *

S6.1.8 * * *

S6.1.8.1. Vehicles manufactured before September 1, 1993 may be burnished according to the procedures set forth in S6.1.8.1(a) or S6.1.8.1(b) of this section, at the manufacturers option. Vehicles manufactured on or after September 1, 1993 shall be burnished according to the procedures set forth in S6.1.8.1(b) of this section.

(a) With the transmission in the highest gear appropriate for the series given in Table IV, make 500 brake applications at a deceleration rate of 10fsps, or at the vehicles maximum deceleration rate if less than 10 fsps, in the sequence specified. Except where an adjustment is specified, after each brake application accelerate to the next speed specified and maintain that speed until making the next brake application at a point 1 mile from the initial point of the previous brake application. If a vehicle cannot attain any speed specified in 1 mile, continue to accelerate until the specified speed is reached or until the vehicle has traveled 1.5 miles from the initial point of the previous brake application, whichever occurs first. If during any of the brake applications specified in Table IV the hottest brake reaches 550° F, make the remainder of the 500 brake applications from that snub condition, except that a higher or lower snub condition shall be used as necessary to maintain an after-stop temperatire of the hottest brake exceeds 550° F, make the remainder of the 500 brake applications from that snub condition, without regard to brake temperature. The brakes shall be adjusted three times during the burnish, with each adjustment made in accordance with the manufacturer's recommendations. Any automatic pressure limiting valve is in use to limit pressure as designed, except that any automatic front axle pressure limiting valve is bypassed if the temperature of the hottest brake on a rear axle exceeds the temperature of the hottest brake on a front axle by more than 125° F. A bypassed valve is reconnected if the temperature of the hottest brake on a front axle exceeds the temperature of the hottest brake on a rear axle by 100° F or more.

TABLE IV

Series	Snubs	Snub conditions (highest speed indicated, miles per hour)
1	175	40-20
2	25	45-20
3	25	50-20
4	25	55-20
5	250	60-20

(b) With the transmission in the highest gear approprrate for a speed of 40 mph, 500 snubs between 40 mph and 20 mph at a deceleration rate of 10 fsps, or at the vehicle's maximum deceleration rate if less than 10 fsps. Except where an adjustment is specified, after each brake application accelerate to 40 mph and maintain that speed until making the next brake application at a point 1 mile from the initial point of the previous brake application. If the vehicle cannot attain a speed of 40 mph in 1 mile, continue to accelerate until the vehicle reaches 40 mph or until the vehicle has traveled 1.5 miles from the initial point of the previous brake application, whichever occurs first. Any automatic pressure limiting valve is in use to limit pressure as designed. The brakes shall be adjusted three times during the burnish procedure, in accordance with the manufacturer's recommendations, after 125, 250, and 375 snubs, and shall be adjusted after burnish in accordance with the manufacturer's recommendations. * * * * *

5. S6.2.6 of §571.121 is revised to read as follows:

S6.2 *Dynamometer test conditions.* * * * * *

S6.2.6. Brakes are burnished before testing as follows: Place the brake assembly on an inertia dynamometer and adjust the brake as recommended by the brake manufacturer. Make 200 stops from 40 m.p.h. at a deceleration of 10 fsps, with an initial brake temperature on each stop of not less than 315° F and not more than 385° F. Make 200 additional stops from 40 m.p.h. at a deceleration of 10 f.s.p.s. with an initial brake temperature on each stop of not less than 450° F and not more than 550° F. The brakes shall be adjusted three times during the burnish procedure, after 100, 100, and 300 stops, and at the conclusion of the burnishing, in accordance with the manufacturer's recommendations. *****

Issued on March 9, 1988

Diane K. Steed
Administrator

53 F.R. 8190
March 14, 1988

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems
(Docket 88-05; Notice 2)

ACTION: Final rule.

SUMMARY: Standard No. 121, *Air Brake Systems,* specifies braking requirements for trucks, buses and trailers equipped with air brake systems. Some vehicles which fall within one of those vehicle classes are excluded from the standard because their attributes, typically those relating to configuration, speed or weight, result in restricted highway operation. This notice amends Standard No. 121 by eliminating the exclusion of vehicles based on width, except for trailers that have a width of more than 102.36 inches with extendable equipment in the fully retracted position and are equipped with two short track axles in a line across the width of trailer.

DATES: The amendment is effective September 14, 1988.

SUPPLEMENTARY INFORMATION: Standard No. 121, *Air Brake Systems,* specifies braking requirements for trucks, buses and trailers equipped with air brake systems. Certain vehicles are excluded by section S3 from the standard's applicability because they have unusual physical or operational characteristics that result in restricted highway operation (e.g., low speed, permit requirements, daytime operation) which limits hazards and the possibility of accidents. Also, the unusual configurations and low production volumes of these vehicles sharply increase compliance costs.

On January 21, 1988, NHTSA published in the *Federal Register* (53 FR 1643) a notice of proposed rulemaking (NPRM) to eliminate from Standard No. 121 a provision which excludes vehicles that have an overall vehicle width of more than 102 inches. The notice was issued in response to a petition for rulemaking submitted by Corpac Industries, Inc.

Corpac stated in its petition that the Surface Transportation Assistance Act of 1982 prevents states from establishing a maximum width of more than or less than 102 inches for commercial motor vehicles operating on the National Network and that this was subsequently interpreted by the Federal Highway Administration as including its approximate metric equivalent, i.e., 2.6 meters (102.36 inches). The petitioner submitted information showing that thousands of trailers are now being produced which are 102.36 inches wide. Corpac argued that Standard No. 121 does not technically apply to these vehicles and urged that the 102-inch exclusion be eliminated to prevent the production of vehicles with possibly markedly inferior braking performance.

NHTSA noted in the January 1988 NPRM that one issue raised by Corpac's petition was whether new 102.36-inch trailers are excluded from Standard No. 121 by virtue of the provision, set forth in section S3(a), that excludes vehicles that have "an overall vehicle width of more than 102 inches with extendable equipment in the fully retracted position." The agency concluded that these vehicles are not excluded from Standard No. 121.

Section 416(a) of the Surface Transportation Assistance Act of 1982 states that "(n)o state, other than the State of Hawaii, shall establish, maintain, or enforce any regulation of commerce which imposes a width limitation of *more or less than 102 inches* on any segment of the National System of Interstate and Defense Highways, or any other qualifying Federal-aid highway as designated by the Secretary of Transportation, with traffic lanes designed to be a width of twelve feet or more . . . ." (Emphasis added.) Thus, a state may not prohibit vehicles with a width of 102 inches or less, or permit vehicles with a width greater than 102 inches, on these highways. (States are permitted under section 416(b) to grant special use permits to vehicles that exceed 102 inches in width.)

In proposing regulations under the statute, the Federal Highway Administration (FHWA) stated the following:

> "The American National Metric Council and the Truck Trailer Manufacturers Association have called attention to the practices of some Canadian trailer manufacturers to construct their trailers 2.6 meters wide. This dimension is equivalent to 102.36 inches. The FHWA is interested in knowing the advantages and disadvantages of allowing trailers of 102.36-inch widths on the roads as perceived by the State and the public, in general. The FHWA solicits

comments on the question of allowing 102.36-inch wide trailers on the National Network." 48 FR 41280, September 14, 1983.

In issuing a final rule, the FHWA stated;

"Commenters on the subject of recognizing the approximate metric width equivalent of 2.6 meters (102.36 inches), on trailers were strongly in favor of such a position. Standardization of truck width on an international basis is seen as an important objective, which will serve to enhance international trade. The FHWA concurs in that assessment. The final rule as contained in Section 658.15 establishes the maximum width as 102 inches or its approximate metric equivalent of 2.6 meters. The FHWA believes the States can accommodate the rule without changing laws or violating congressional intent." 49 FR 23312, June 5, 1984.

The FHWA regulation, set forth at 23 CFR §658.15, states:

"No State shall impose a width limitation of more or less than 102 inches, or its approximate metric equivalent, 2.6 meters (102.36 inches) on a vehicle operating on the National Network, except for the State of Hawaii . . . ."

Thus, 102.36 inches is defined in the FHWA regulation as the "approximate metric equivalent" of 102 inches, and was determined by FHWA as being consistent with Congressional intent as not being "more or less" than 102 inches. Particularly given this background, it is NHTSA's opinion that the 102.36 inch trailers being produced in light of the FHWA regulation are not considered to have a width of "more than 102 inches" within the meaning of Standard No. 121's applicability section. Also, previous *Federal Register* notices make it clear that NHTSA did not intend the criteria in section S3 to exclude typical configuration vehicles from Standard No. 121. For example, in establishing the 102-inch width exclusion, the agency stated that, in all states other than Hawaii, vehicles exceeding this width were allowed to operate on the highway only by permit. See 42 FR 42208, August 22, 1977.

NHTSA stated in the January 1988 NPRM that while it is the agency's opinion that the 102.36-inch vehicles are not excluded from Standard No. 21, it agreed that it should clarify the applicability of the standard to those vehicles. The agency stated that while such clarification could be achieved through amending S3(a) to expressly refer to the 102.36-inch trailers, it believed that a better approach would be to eliminate the exclusion altogether. The agency tentatively concluded that it was not necessary to retain the width exclusion. NHTSA stated that it was unaware of any vehicles wider than 102 inches or 102.36 inches that do not come within one of section S3's other exclusions, and that it believed that those exclusions are sufficiently comprehensive to continue to exclude all vehicles whose function or construction result in restricted highway operation and for which compliance would be very difficult. The agency accordingly proposed to delete section S3's width exclusion.

NHTSA received four comments on the January 1988 NPRM. General Motors stated that it supports the proposed amendment to eliminate the exclusion based on vehicle width on the basis that the other criteria stated in section S3 are sufficiently comprehensive to exclude the vehicles that should be excluded from the applicability of Standard No. 121. The Insurance Institute for Highway Safety also supported the proposal, stating that any exclusion from a Federal motor vehicle safety standard should be limited to specific and unusual circumstances. A comment supporting the proposal was also submitted by Corpac.

The Truck Trailer Manufacturers Association (TTMA) commented that if the width exclusion is eliminated from Standard No. 121, a new exclusion should be added. That commenter stated that the elimination of the width exclusion would make some trailers with trunnion or dual oscillating suspension/axle assemblies subject to the standard. According to TTMA, these trailers have a unique undercarriage in that there are two short track axles across the trailer's width instead of one, and do not have sufficient space for brakes that can meet Standard No. 121. That commenter stated that this construction results in a trailer which is typically 120 inches wide, but that some trailers may expand to 120 inches in width when loaded but are less than 102 inches wide when empty. According to TTMA, these trailers often travel at highway speeds when used on the road, but under permit due to their width. That commenter stated that while most of these trailers are excluded from Standard No. 121 by having a gross axle weight rating greater than 29,000 pounds, some of the trailers are excluded only because they have a width greater than 2.6 meters (102.36 inches). TTMA recommended that a new exclusion be added for any trailer equipped with two short track axles in a line across the width of the trailer.

After considering the comments, NHTSA has decided to eliminate Standard No. 121's width exclusion, except for trailers that have a width of more than 102.36 inches with extendable equipment in the fully retracted position and are equipped with two short track axles in a line across the width of the trailer. NHTSA has concluded that the trailers with trunnion or dual oscillating suspension/axle assemblies identified by TTMA are vehicles whose function or construction result in restricted highway

operation and for which compliance would be very difficult. The agency indicated in the NPRM that it did not intend to extend the applicability of Standard No. 121 to such vehicles. NHTSA is retaining a width provision in the revised exclusion to make it clear that it does not exclude any vehicles not previously excluded by the old width exclusion.

The effective date is 30 days after publication of a final rule in the *Federal Register*. NHTSA has determined that there is a good cause for an effective date within that time period since the amendment clarifies the standard's applicability and is not believed to affect the applicability of the standard to any vehicles currently being produced.

Part 571—[AMENDED]

In consideration of the foregoing, 49 CFR Part 571 is amended as follows:

S3 is revised to read as follows:

S3. *Application.* This standard applies to trucks, buses, and trailers equipped with air brake systems. However, it does not apply to:

(a) Any trailer that has a width of more than 102.36 inches with extendable equipment in the fully retracted position and is equipped with two short track axles in a line across the width of the trailer.

(b) Any vehicle equipped with an axle that has a GVWR of 29,000 pounds or more;

(c) Any truck or bus that has a speed attainable in 2 miles of not more than 33 mph;

(d) Any truck that has a speed attainable in 2 miles of not more than 45 mph, an unloaded vehicle weight that is not less than 95 percent of its GVWR, and no capacity to carry occupants other than the driver and operating crew;

(e) Any trailer that has a GVWR of more than 120,000 pounds and whose body conforms to that described in the definition of "heavy hauler trailer" set forth in S4;

(f) Any trailer that has an unloaded vehicle weight which is not less than 95 percent of its GVWR; and

(g) Any load divider dolly.

Notwithstanding any language to the contrary, sections S5.3.1, S5.3.1.1, S5.3.2, S5.3.2.1, S5.3.2.2, S5.7.1, S5.7.3(a) and S5.7.3(b) of this standard are not applicable to trucks and trailers, and section S5.3.1 of this standard is not applicable to buses.

Issued on August 10, 1988

Diane K. Steed
Administrator

53 F.R. 30680
August 19, 1988

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems

(Docket No. 87-04; Notice 4)

ACTION: Final rule; partial response to petitions for reconsideration; delay of effective date.

SUMMARY: In a final rule published in the *Federal Register* (53 FR 7931) on March 11, 1988, NHTSA amended Standard No. 121, *Air Brake Systems,* to clarify the standard's parking brake requirements. The amendments permitted manufacturers to comply with the new requirements as an option to complying with the requirements being superseded effective April 11, 1988, and required mandatory compliance with those requirements effective September 7, 1988 (180 days after publication). In partial response to two petitions for reconsideration, this notice amends the standard by extending for one year (i.e., until September 7, 1989) the period for which manufacturers may comply with either the earlier or new requirements. The agency will later provide a further response to the two petitions for reconsideration.

DATES: The amendments made by this rule are effective September 9, 1988.

SUPPLEMENTARY INFORMATION: In a final rule published in the *Federal Register* (53 FR 7931) on March 11, 1988, NHTSA amended Standard No. 121, *Air Brake Systems,* to clarify the standard's parking brake requirements. The amendments required actuation of a mechanical means for holding the parking brakes, within three seconds after operation of the parking brake control. (For trailers, such actuation was required within three seconds after venting to the atmosphere of the front supply line connection is initiated.) In addition, vehicles were required to be capable of meeting requirements related to parking brake retardation force within the three second period. The amendments also required that the grade holding test (or alternative drawbar test) be met with only the mechanical means of holding the parking brakes in operation. The amendments required mandatory compliance effective September 7, 1988 (180 days after publication), while permitting manufacturers to comply with the new requirements as an option to complying with the requirements being superseded effective April 11, 1988.

The agency stated in the March 1988 notice that it believed all parking brakes currently being sold complied with the amendments being adopted. The agency also stated its belief that since any necessary certification could be accomplished by engineering analysis and simple tests, 180 days provided a sufficient time for that purpose.

NHTSA received two petitions for reconsideration. One of the petitioners, Volvo GM Heavy Truck Corporation, requested that the agency rescind the application of the timing amendment to tandem trucks with spring brakes, and that one of the specified conditions for the timing tests (initial reservoir system pressure of 100 psi) be removed. That company asserted that compliance with the standard as amended is not practicable and is unreasonable. Volvo GM suggested that NHTSA was generally correct in stating that the rule did not affect parking brakes currently being sold, but that the agency had overlooked a significant segment of the vehicle population, heavy tandem trucks. That company submitted test results for two heavy trucks. According to Volvo GM, "one exceeds the limit and the other does not contain compliance margins sufficient to accommodate manufacturing tolerances." That company also argued that the test condition which specifies initial reservoir system pressure of 100 psi is design restrictive.

The other petitioner, Navistar International Transportation Corporation, stated that it has confirmed that in its parking brake systems the air pressure drops to zero within the allotted time. That company stated that based upon this fact and the agency's statements in the preamble, it believes that its vehicles comply with the timing requirements of the final rule. Navistar International added, however, that after actuation of the control knob, experience has shown that as much as one revolution of the braked wheels may be necessary to permit the brake shoes to be sufficiently energized to reach peak torque. That company stated that this "wrap up" process can take several seconds, depending on brake

characteristics and driver finesse. Navistar International stated that should this "wrap up" movement not be considered permissible by the agency, it requested that its submission be considered a petition for reconsideration of the final rule, to permit the "wrap up" movement.

As is clear from the preamble to the March 1988 final rule, NHTSA did not believe that the amendments would require changes in any parking brakes currently being sold. The agency has not completed its analysis of the two petitions for rulemaking, given the complexity of the issues. However, NHTSA is concerned that the petitions raise the possibility that, contrary to the agency's belief in establishing the March 1988 final rule, some current parking brakes may not comply with the amendments that become effective, on a mandatory basis, on September 7, 1988.

Accordingly, in partial response to the two petitions for reconsideration, NHTSA has decided to delay, for one year, the time the amendments become effective on a mandatory basis. This delay in effective date will permit the agency to complete its analysis of the arguments made by the petitioners, and provide a further response to the petitions. Thus, manufacturers may continue to comply with either the March 1988 requirements or the requirements that were superseded by that notice, until September 7, 1989.

NHTSA finds for good cause that it is in the public interest to establish an immediate effective date for the amendments made by this notice. In the absence of an immediate effective date, manufacturers might be unable to certify that some of their vehicles currently being produced comply with Standard No. 121. The amendments impose no new requirements but instead increase manufacturer flexibility by extending the time they may comply with the alternative parking brake requirements. As discussed above, the new September 7, 1989, effective date will give sufficient time for the agency to complete its analysis of the arguments made by the petitioners, and provide a further response to the petitions.

In consideration of the foregoing, 49 CFR Part 571 is amended as follows:

S5.6.3 *Application and holding.* Each parking brake system shall meet the requirements of S5.6.3.1 through S5.6.3.4, except that, at the option of the manufacturer, vehicles manufactured before September 7, 1989, may meet the requirements specified in S5.6.3.5.

* * *

S5.6.3.5 *(Optional requirement for vehicles manufactured before September 7, 1989).* The parking brake system shall be capable of achieving the minimum performance specified either in S5.6.1 or S5.6.2 with any single leakage-type failure, in any other brake system, of a part designed to contain compressed air or brake fluid (except failure of a component of a brake chamber housing). Once applied, the parking brakes shall be held in the applied position solely by mechanical means.

Jeffrey R. Miller
Acting Administrator

ISSUED ON: Sept. 6, 1988

53 F.R. 35075
September 9, 1988

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems
(Docket No. 85–07; Notice 3)

ACTION: Final rule.

SUMMARY: This notice makes several amendments to Federal Motor Vehicle Safety Standard No. 121, *Air Brake Systems*. First, the test rig used to test the pneumatic timing of trailers is modified to better simulate the performance of actual tractors. Second, the standard's maximum application and maximum release timing requirements for trailers are revised, both to reflect the modified test rig and, for towing trailers and dollies, to ensure faster application and release timing. Third, new requirements are established to address the timing of the interface (gladhand) between towing vehicles and trailers. The purpose of the gladhand timing requirements is to ensure that the air delivery from towing vehicles to towed vehicles is fast enough to apply the brakes of all vehicles in the combination at approximately the same time, thereby avoiding a reduction in combination stability (e.g., trailer bumping) caused by a slow gladhand.

DATES: The amendments made by this rule to the Code of Federal Regulations are effective June 2, 1989. The amendments require mandatory compliance effective May 3, 1991. Between those dates, manufacturers have three options for meeting maximum application and maximum release timing requirements for trailer brake chamber timing: (1) meeting the existing requirements, using the existing test rig, (2) meeting the new requirements, using the new test rig, or (3) meeting requirements approximately equivalent to the existing requirements, using the new test rig.

Background

Pneumatic timing is an important factor in air brake system performance. The time required for a vehicle's service brake chambers to reach a relatively high pressure level after actuation of the brake control by the driver is referred to as "pneumatic application time." Since the generation of brake torque, and therefore braking force, is directly related to the air pressure available in the brake chambers, pneumatic application time affects vehicle stopping distance. As a general matter, the shorter the pneumatic application time, the shorter the vehicle's stopping distance.

For combination vehicles, pneumatic application timing can affect stability. If a trailer's brakes apply more slowly than the towing vehicle's brakes, the trailer can bump the towing vehicle, applying an excessive compressive force on the kingpin connecting the trailer to the towing vehicle. If the brakes are applied during a turn and the road is wet, this force may reduce the stability of the combination and contribute to a jackknife accident.

"Pneumatic release timing," the time required for the pressure in the brake chambers to fall from a relatively high pressure to a relatively low pressure after the driver releases the brake control, also affects braking performance. If a vehicle's wheels lock as the driver is attempting to stop, the vehicle will skid. If the driver is to regain control of the vehicle in this situation, immediate release of the brakes is necessary.

For combination vehicles, pneumatic release timing can affect stability. If a towing vehicle's brakes release more slowly than the trailer's, destabilizing forces may increase at the kingpin.

Standard No. 121, *Air Brake Systems,* specifies certain requirements for pneumatic timing. Section S5.3.3 provides that the brake actuation (application) time for trucks, buses, and trailers must not exceed specified periods of time. Section S5.3.4 provides that the brake release time for these vehicles must not exceed specified periods of time.

The timing tests for trailers, including trailer converter dollies, are not conducted with the trailer connected to an actual tractor. Instead, the trailer's brake system is connected to a test rig. The test rig, which is commonly referred to as the "121 minitractor," delivers air to, and releases air from, the trailer during the timing test. The timing tests for vehicles designed to tow trailers are conducted with a 50-cubic-inch reservoir connected to the control line coupling. This reservoir represents the control line volume of the towed trailer.

The May 1985 NPRM

On May 14, 1985, NHTSA published in the *Federal Register* (50 FR 20113) an NPRM to amend the pneumatic timing requirements of Standard No. 121, for the purpose of improving the timing balance of combination vehicles. The proposal was largely based on research conducted at the agency's Vehicle Research Test Center (VRTC). On July 1, 1985, NHTSA published in the *Federal Register* (50 FR 27032) a notice extending the comment period by six months to permit commenters more time to analyze the agency's data and to conduct their own testing.

First, NHTSA proposed to modify the test rig used to test the pneumatic timing of trailers. The existing test rig, which is shown as Figure 1 in Standard No. 121, was derived from SAE Recommended Practice J982. At first, the standard did not specify performance characteristics for the test rig. However, after petitions pointed out that the agency's compliance tests might prove inconclusive if a manufacturer could show conformity on a faster test rig, NHTSA adopted the actuation and release times suggested by the petitioners. These times, which are specified in section S6.1.13, reflected the performance of test rigs then in use by manufacturers.

NHTSA's research since Standard No. 121 was issued has indicated, however, that some current truck tractors and towing straight trucks have apply and release times that are much slower than the test rig. As a result, the timing of trailers with the test rig is not necessarily representative of timing of the trailers when towed by actual tractors.

This has resulted in trailer plumbing that is optimized for the test rig and not necessarily optimized with actual tractors. In particular, some trailer manufacturers use control line tubing with an exterior diameter of one-half inch because it produces faster application times during Standard No. 121's tests than smaller tubing. NHTSA's research indicated, however, that the half-inch tubing usually produces *slower* actuation times than three-eighths-inch tubing on trailers connected to actual tractors.

Based on its research, NHTSA proposed modifications in the test rig to bring its performance more in line with that of actual tractors. In place of the rapid application and release times of the existing test rig (0.06 and 0.22 second), the agency proposed a nominal application time of 0.35 second and a nominal release time of 0.70 second. NHTSA also proposed a more detailed layout for the test rig, including metering valves and other plumbing changes to permit better calibration of the trailer test rig. Finally, in the interest of clarifying test conditions, the agency proposed to specify the reservoir pressures in the test rig during brake testing.

A second aspect of the proposal concerned vehicle timing requirements. NHTSA proposed to establish new requirements to address the timing of the interface (gladhand) between towing vehicles and trailers, and to amend the maximum application and maximum release timing requirements for trailers and other vehicles.

The purpose of the proposed gladhand timing requirements was to ensure that the air delivery from towing vehicles to towed vehicles is fast enough to apply the brakes of all vehicles in the combination at approximately the same time, thereby avoiding combination instability (e.g., trailer overrun) that might be caused by a slow gladhand.

The proposed changes in Standard No. 121's application and release times for trailers were in part to account for the slower timing of the modified test rig. Given the 0.29 second slower application time for the modified test rig, it would be necessary to increase the current 0.30 second maximum application time for trailers by roughly that amount (i.e., to approximately 0.60 second) in order to maintain an equivalent requirement. However, NHTSA proposed a maximum time of 0.50 second, as its research indicated that this time was easily obtainable with the modified test rig. The faster time was desired to shorten stopping distances and improve vehicle stability (e.g., reduce trailer bumping) caused by slow trailer braking. NHTSA also proposed to lengthen the maximum release time from 0.65 second to 1.0 second. Given the 0.48 second slower release time for the test rig, this represented a proposal to require faster trailer release timing.

NHTSA also proposed changes in the timing requirements for trailer converter dollies and trucks designed to tow other air-braked vehicles. For trailer converter dollies, NHTSA proposed to lengthen the maximum application time from 0.35 second to 0.50 second, and the maximum release time from 0.65 second to 1.00 second. The proposed maximum application and release times for trailer converter dollies were thus the same as for trailers. NHTSA also proposed to lengthen the maximum application time for trucks designed to tow other air-braked vehicles, from 0.45 second to 0.50 second.

Comments were received from the Motor Vehicle Manufacturers Association (MVMA), Truck Trailer Manufacturers Association (TTMA), individual truck and trailer manufacturers, brake and brake component manufacturers, the American Trucking Associations (ATA), and the Insurance Institute for Highway Safety (IIHS). The vast majority of the commenters supported modification of the test rig and the establishment of gladhand timing requirements. However, a number of commenters opposed various aspects of the proposed maximum application and maximum release times for trailers, trucks designed to tow other vehicles, and gladhands. Several commenters also requested establishment of a minimum time for tractor

brake application, in order to prevent combination balance problems caused by overly fast tractors. A detailed discussion of the issues raised by the commenters is provided below.

Modified Test Rig

The first aspect of NHTSA's proposal to improve the timing balance of combination vehicles was to modify Standard No. 121's test rig in order to better simulate tractors. Commenters generally supported this aspect of the proposal. MVMA, for example, stated that modification of the current mini-tractor would be a significant step toward improving brake application and release timing between tractors and trailers. That organization stated that it agrees that the trailer test rig, as well as current timing requirements, need to be modified to more closely simulate today's equipment. General Motors (GM) commented that it believes that the proposed modification of the mini-tractor is appropriate and will significantly improve the real-world relevancy of the tests for which it is employed. That company stated that since trailer brake systems must currently be tuned to achieve compliance with the unrealistically fast test rig, this change alone should significantly improve the standard.

While supporting modification of the test rig, a number of commenters questioned the proposed specification of test rig componentry. As indicated above, the NPRM proposed a more detailed layout for the test rig, including metering valves and other plumbing changes to provide trailer test rig calibration.

Some commenters recommended dropping the proposed component specifications and instead specifying more complete pressure versus time characteristics. Midland Brake commented that the proposal specified part of the components and the end points of the pressure versus time characteristics, which it contended allows a multitude of pressure versus time characteristics which may result in a great variation of trailer timing results depending upon the pressure versus time characteristics of the particular test rig. Midland stated that there are two means to accomplish the intended result: specifying the exact full characteristics of each component or instead specifying the pressure versus time characteristics. That commenter recommended specifying the pressure versus time characteristics. According to Midland, there is no reason to specify any of the components, since timing values for 0 to 60 psi apply and 95 to 5 release can be specified without specifying components. Midland stated that the proposal would unnecessarily require manufacturers to include each component in their test rigs, adding cost without benefits. GM similarly commented that the proposed componentry specifications are inherently incapable of assuring specific performance levels and suggested that a pressure versus time curve should instead be specified.

Other commenters recommended adopting the proposed component specifications while also specifying more complete pressure versus time characteristics. Fruehauf commented that it built two different mini-tractors, substantiating that a mini-tractor built around the guidelines presented in the docket is obtainable and that the repeatability of mini-tractors is acceptable if the calibration curves are similar. Fruehauf also stated that it agrees with the proposed mini-tractor schematics but believes that a calibration curve should be provided. Theurer similarly commented that the lack of a pressure-time pulse for the test rig is a shortcoming of both the existing rule and the proposal. TTMA stated that it supports the recommendations of Fruehauf and Theurer that Standard No. 121 specify the performance of the test rig by providing a pressure-time application and release curve.

ATA commented that the mini-tractor must be consistent regardless of who builds it, in order to ensure that all trailers are tested in a like manner. It recommended that detailed specifications be given for the test rig's quick release valve. Echlin commented that it strongly suggests that the plumbing details of the test rig be omitted in view of the confusion generated by the details. That company stated that to control the build-up and decay characteristic of the test rig to any greater degree than the proposed limits of 0.35 second and 0.70 second appears to lead to greater confusion than gain.

Two commenters, Ford and International Harvester (IH), recommended slower test rig timing. Ford recommended that the proposed test rig actuation time be extended from 0.35 second to 0.45 second, and that the proposed test rig release time be extended from 0.70 second to 0.85 second. That commenter stated that it had analyzed the control line coupling (gladhand) application timing of 21 tractor vehicles tested at VRTC and calculated the mean value at 0.308 second with a range from 0.22 second to 0.44 second. Ford stated that based on this small sample, approximately 16 percent of all tractors may be expected to exceed 0.37 second (one standard deviation above the mean), and 2.3 percent of all tractors may be expected to exceed 0.42 second (two standard deviations above the mean). Ford stated that for gladhand release timing, the mean value of the VRTC sample is 0.68 second with a range from 0.47 second to 0.98 second. That commenter stated that approximately 16 percent of all trailers may be expected to exceed 0.85 second (one standard deviation above the mean), and 2.3 percent may be expected to exceed 1.02 seconds (two standard deviations above the mean). Ford argued that its recommended actuation and release times would be more representative. IH recommended test rig application and release times of 0.50 second and 0.90 second, respectively.

After considering the comments, NHTSA has decided to adopt a modified test rig along the lines of the proposal, while specifying both a layout of test rig componentry and pressure versus time application and release curves. The agency believes that the times suggested by Ford and IH are less representative than those of typical tractors. In both instances, the times are further away from the mean values of the data cited by Ford than those of the proposal.

NHTSA agrees with commenters that specification of pressure versus time application and release curves, which can be used to calibrate the test rig, will help ensure repeatability of test results. The curves adopted in Figure 3 of this notice are based on the performance of VRTC's test rig, which was built to the specifications of the proposal. The agency is not adopting the recommendation of some commenters that tolerances be established for the application and release curves, since the inclusion of tolerances in the standard would increase the variability of test results obtained using equipment specified by the standard. This allows manufacturers leeway in building their test rigs and eliminates the need to specify the performance of each component. It has never been the agency's policy to specify performance curve tolerances in any of its rules. The normal compliance test convention implicit in the single specification as shown in Figure 3 is that the manufacturers would set the performance of their new mini-tractor equal to or slower than the performance curves (to the right or to the adverse side), while the agency would set its compliance mini-tractor equal to or faster than the curve (to the left or favorable side). If a manufacturer's trailer brake chamber timing passed with a slower mini-tractor they could be assured that their trailer would pass with a faster compliance mini-tractor. A tolerance boundary as suggested by GM and others would create the need for multiple testing which can be very burdensome.

The agency believes that it is appropriate to specify generic test rig componentry as well as application and release curves. By providing a layout of componentry, the public is informed how to build a test rig that can produce the performance specified in the curves. Also, as a practical matter, it is necessary to use componentry similar to that of the proposal in order to obtain the performance reflected in the curves. Since the component specifications are generic, they are not restrictive with respect to which manufacturer's components are used.

In response to comments, NHTSA is adopting several minor changes in the component specifications. The California Highway Patrol (CHP) and Bendix noted that the test procedure for brake release times specifies 95 psi while the legend in Figure 1, Trailer Test Rig, listed only the 100 psi application pressure setting. The figure is changed to specify that the test rig's regulator is set at 100 psi for the application time test and 95 psi for the release time test.

Bendix also recommended that reservoir volume should be specified as 1000–1500 cubic inches to allow use of standard size air brake reservoirs, that the supply connection be moved between the check valve and regulator to prevent loss of reservoir pressure on disconnection of the gladhand, and that a means to shut off shop air be provided. While small differences in reservoir volume would not make any appreciable difference in test results, the wide range of sizes suggested by Bendix could have an effect on those results. While this might be controlled by the calibration curves, NHTSA believes that the purpose of the component specifications is best served by specifying a single reservoir volume that can easily produce the required test rig performance. On the other hand, the agency does not believe it is necessary to further define quick release valve or coiled tubing, as suggested in comments, since any effect on performance caused by the use of slightly different components can easily be accounted for by adjusting the test rig in accordance with the calibration curves. The agency notes that while the reservoir used in the mini-tractor was nominally meant to be 1,000 cubic inches, the NPRM specified a 1,015 cubic inch size because that was the size used in VRTC testing. For the final rule, NHTSA is specifying 1,000 cubic inches. If a production tank of slightly larger volume is used, epoxy can be poured into the tank to bring it down to the specified volume.

NHTSA agrees with Bendix's suggestion that a means should be provided to prevent loss of reservoir pressure upon disconnection of the gladhand. Rather than move the supply connection between the check valve and the regulator, however, the agency is specifying the addition of a shut-off valve to the test rig supply line. This makes the test rig easier to use and also results in greater utility for the device. The agency notes that the Society of Automotive Engineers is considering using the mini-tractor in a new recommended practice for determining trailer reservoir volume, which would require the trailer supply line to receive air from the mini-tractor with the shop air disconnected. NHTSA does not find it necessary to specify a means for shutting off shop air, since a check valve is already included between the shop air and reservoir (see Figure 1).

While NHTSA would use test rigs meeting Standard No. 121's component specifications in its enforcement testing, it notes that the National Traffic and Motor Vehicle Safety Act does not require particular testing by manufacturers. Instead, manufacturers must exercise due care in certifying that their vehicles meet applicable safety standards. If a manufacturer is able to obtain a test rig that is different than that specified by Standard No. 121 but produces

the same performance, the manufacturer is free to use that rig in its testing. Therefore, component specifications do not result in any increased or unnecessary costs for manufacturers.

Some commenters expressed concern about possible difficulties in obtaining modified test rigs. TTMA stated that suppliers of previous test rigs no longer manufacture them and that the requirements would necessitate more than the usual difficulty in finding means of designing and building the test rigs. Theurer stated that it is concerned about the cost of modifying or acquiring new test rigs and stated that none of the manufacturers of its test rigs currently supply test rigs, nor are prepared to do modifications to existing equipment.

NHTSA estimates that a current 121 test rig can be reworked for approximately $200 (parts only) using a smaller volume tank and several additional valves, or a new one can be built for $400 to $500 (parts only). NHTSA's experience in building the modified test rig at VRTC indicates that it is a relatively simple task and does not require any components that are not readily available. Similarly, Freuhauf had no difficulty in building a modified test rig. If a manufacturer is unable or prefers not to build its own test rigs, it can have them built by companies which produce specialized equipment.

Timing Requirements

The second aspect of NHTSA's proposal concerned vehicle timing requirements. The agency proposed to establish gladhand timing requirements and to amend the maximum application and maximum release timing requirements for trailers and other vehicles.

A number of commenters questioned whether certain of the specific timing values of the NPRM are justified, particularly to the extent that other than minimal vehicle modifications may be required. For example, MVMA stated that it agrees that timing is a factor in brake balance, but questions its significance in relationship to brake torque and pneumatic balance. According to that commenter, industry experience shows that combination timing has a minimal effect on vehicle balance. MVMA also asserted that NHTSA's own test results do not support the significance of combination timing on trailer push, jackknifing, or accident avoidance. That organization recommended that the agency establish timing requirements which will require minimal changes to towing vehicles.

Bendix commented that the proposed changes would require air brake system design changes to most tractors, towing trucks, non-towing trailers, towing trailers and dollies. According to that commenter, the proposed changes would result in faster application and release times for combination vehicles and would also result in a reduction in the difference between the response times of individual brakes in a combination vehicle. Bendix stated that it believes that, for combination vehicles, faster application times coupled with improved timing balance will result in shorter stopping distances and better driving control. That commenter stated that it believes also the proposed changes are in the proper direction and are technically feasible, although it is unaware of data to substantiate performance improvements.

Several commenters argued that adoption of the proposed timing requirements would not ensure combination vehicle stability because the brakes of a tractor with very fast application time could still actuate well before the brakes of a trailer meeting the proposed requirements, with the result that the trailer would overrun the tractor. ATA commented that the actual maximum application times which are adopted are not as important as the necessity to adopt a minimum time for tractor brake application. That commenter stated that no matter what the maximum brake apply time for tractors becomes, a minimum time must also be established to ensure that tractor brakes not actuate too quickly, putting the combination out of balance and defeating the purpose of the proposed revisions. ATA stated that very fast tractors are being sold every day, with application times as fast as 0.13 second, with many at 0.14 second and 0.15 second. Other commenters supporting minimum application times for tractors included CHP, Echlin, Theurer, and Brake Technology Company.

International Harvester (IH) submitted test data which it asserted indicates that although a 0.60 second differential in tractor-to-trailer application timing results in an unacceptable pushing sensation, a 0.40 second differential is acceptable. That commenter stated that its test results, as well as other field experiences, convinces it that there is no compatibility benefit in requiring the timing differential between tractor and trailer chambers to be closer than 0.4 second. IH also commented that to truly control the timing differential between tractors and trailers, a relationship of gladhand to tractor and trailer chamber timing needs to be established.

A further discussion of comments concerning the proposed vehicle timing requirements, categorized by requirement and/or type of vehicle, is provided below.

Gladhand Timing Requirements

As discussed above, Standard No. 121 does not currently specify timing requirements at the air line coupler between a tractor and trailer (truck gladhand) or between successive trailers in multiple trailer combinations (trailer gladhand). While the standard's existing timing tests for vehicles designed to tow trailers are conducted with a 50-cubic-inch reservoir (repre-

senting a typical trailer's control line volume) connected to the control line coupling, no minimum times are specified for the rise or fall of air pressure in the test reservoir. The NPRM proposed to require that a power unit, e.g., a tractor, increase the pressure in the test reservoir to 60 psi in not more than 0.35 second, and release the pressure in not more than 0.70 second. The NPRM proposed to require that a trailer increase the pressure in the test reservoir in not more than 0.50 second, and release the pressure in not more than 1.00 second. The purpose of the proposed gladhand timing requirements was to ensure that the air delivery from towing vehicles to towed vehicles is fast enough to result in application of the brakes of all vehicles in the combination at approximately the same time, thereby avoiding reduction in combination stability (e.g., trailer bumping) caused by a slow gladhand.

Most commenters addressing the proposed gladhand timing requirements supported the establishment of such requirements but argued that the proposed requirements are too stringent. MVMA stated that it believes that gladhand timing requirements will improve tractor/trailer compatibility. It expressed concern, however, that the proposed requirements may require modification of most of the air braked vehicles produced by its member companies. That organization argued that available research does not justify requiring extensive product modifications and suggested that requirements be established that are achievable with minimal modifications.

GM stated that while it believes the addition of gladhand timing requirements may improve combination vehicle compatibility, it does not believe NHTSA has provided any data to substantiate a need for the proposed 0.35/0.70 second tractor control line application/release times. That company stated that the 0.35/0.70 second values appear to represent only an average of times of vehicles tested by the agency and that the vehicles tested are not totally representative of the current vehicle fleet. GM argued further that while NHTSA has implied that the kingpin forces measured are largely the result of the brake timing existent on the tested vehicle combinations, those forces are actually a function of brake system pneumatic balance, torque balance, brake application technique and timing. That commenter asserted that NHTSA has demonstrated neither that there is a need to lower such forces nor that the revisions proposed would serve to achieve that end. GM recommended as an initial step that the 0.50/1.00 second application and release times proposed for trailer gladhands also be adopted for tractors and trucks equipped to tow trailers. It stated that if the 0.50/1.00 second timing is appropriate for trailers utilized as towing vehicles, it questions why these values would not also be appropriate for all towing vehicles. GM argued that its recommendation would accomplish the objectives of the proposal without requiring as extensive a change in pneumatic systems.

Midland Brake commented that although the control line coupling timing of 0.35 second apply and 0.70 second release may be typical values for power units, there appears to be no firm evidence or rationale for mandating these values as the maximum allowable. That commenter added that vehicle manufacturers would have to design their brake systems for apply and release times even less than these values to be certain that all production vehicles with normal manufacturing tolerances will meet the requirements. Midland stated that it believes that the proposed requirements would cause significant changes by many vehicle manufacturers and, like GM, argued that 0.50/1.00 second requirements would be more practical.

IH stated that its test results indicate that application timing of 0.50 second, as opposed to the proposed value of 0.35 second, would provide a tractor/trailer timing differential that would not result in trailer pushing or any other combination compatibility problem. That commenter stated that it is difficult to determine the effect of trailer release timing and tractor/trailer release differentials on compatibility. According to IH, however, its test results indicate that a release timing at the tractor coupling of 0.90 second is sufficient. That company also argued that it disagrees that the costs of the proposed gladhand timing requirements would be minimal. It stated that although NHTSA's test results indicated that the majority of tractors passed the proposed requirements, they were not worst-case vehicles. IH stated that the designs of all wheelbases must be changed if the longest wheelbase does not meet the requirements, since it does not customize the piping of a tractor by wheelbase. According to that company, the proposed requirements would require an average customer cost increase of $25 per unit. IH stated that its customers would pay $725,000 per year for an imperceptible benefit of 10 milliseconds on application and 40 milliseconds on release.

Freightliner stated that its data show that significant modifications to the pneumatic system are required for the majority of its product line to approach the proposed 0.35 second application limit. It stated that it endorses the concept of setting standards at the gladhand but recommends a maximum application value of 0.40 second for vehicles under 200 inches in wheelbase and 0.45 second for vehicles with a wheelbase over 200 inches.

Ford recommended that the maximum application and release gladhand timing requirements for power units be set at 0.45/0.85 second. That commenter stated that any redesign of its tractors necessary to bring them into compliance with the proposed val-

ues would not have a substantial effect on tractor/trailer pneumatic timing capability.

Echlin stated that it questions mandating an upper limit to the application and release times at the tractor/towing truck gladhand at what has been indicated to be "within the range of times observed in the trucks tested at the VRTC." That commenter stated that since it has not been demonstrated that the response rate at the gladhand of trucks/tractors is too slow, there appears little substance to require vehicle manufacturers to incur the expense to modify these vehicles to change the nominal apply and release characteristics. Echlin suggested that a better approach might be to assume that the 0.35/0.70 second times are adequate and add an upper limit to this characteristic, such as 0.40/0.80 second.

One commenter, Volvo White, opposed the adoption of gladhand timing requirements. That company argued that manufacturers' compliance data would be invalidated, that many of the changes implemented over the last ten years to improve tractor trailer compatibility would no longer be available, and that NHTSA's research does not justify the need for the proposed requirements. According to Volvo White, its product lines would not conform without major analysis and redesign activities. It also stated that it believes, although it cannot confirm without extensive tests, that the design changes required to ensure conformance would adversely affect compatibility for some of its customers.

NHTSA believes that timing is an important factor for safe air brake system performance and notes that most commenters supported the establishment of gladhand timing requirements. The agency agrees with commenters that other factors, including brake torque and pneumatic balance, are also important factors in brake balance. However, the significance of these other factors does not obviate the safety need for appropriate brake timing requirements.

In establishing timing requirements for combination vehicles, an important goal is to avoid trailer brakes applying so slowly that excessive compressive, and potentially destabilizing forces are produced at the kingpin. In more extreme cases, these compressive forces create a pushing sensation that is unnerving to drivers. However, the forces can decrease stability at levels that cannot be detected by drivers. Therefore, NHTSA does not agree with IH's argument that a 0.40 second differential is acceptable simply because drivers have difficulty detecting a pushing sensation at that level.

ATA argued that ideal or optimum combination vehicles would apply the rearmost brakes first and then sequentially move forward until the front axles are applied last. While this approach might be ideal for reducing combination instability, NHTSA believes that it could only be achieved by major changes in air brake design. Moreover, a standard requiring such performance could result in longer stopping distances, since it might be necessary for the brakes on leading axles of such combinations to actuate significantly later than on current designs. In establishing timing requirements, NHTSA must consider both combination balance and potential effects on stopping distance.

The 0.35 second/0.70 second maximum application and release gladhand timing requirements proposed by NHTSA for power units are typical of current production vehicles. For example, recent tests conducted for the Truck Trailer Brake Research Group (TTBRG) had gladhand application times of 0.15, 0.20, 0.24, 0.25, 0.25, 0.26, 0.26, 0.26, 0.27, 0.27, 0.31, 0.32, 0.33, 0.36 and 0.39 second. The gladhand release times for these vehicles were 0.43, 0.45, 0.48, 0.54, 0.55, 0.57, 0.61, 0.62, 0.63, 0.65, 0.67, 0.68, 0.69, 0.73 and 0.78 second.

In developing the NPRM, NHTSA did not intend to require major changes in air brake design. On the other hand, the goal of improving the balance of combination vehicles cannot be achieved by simply setting requirements at the level of the "least common denominator" vehicles being produced. The maximum application time at the gladhand is particularly important for safety since a slowing of this time slows the application time for trailer brakes, resulting in both increased stopping distances *and* the potential for increased instability caused by "trailer push."

After reviewing the comments, NHTSA continues to believe that the proposed 0.35 second maximum gladhand application time for power units is appropriate. Most vehicles easily meet this requirement, and most others can meet the requirement with minor plumbing changes. A few special design towing trucks may require the addition of a relay valve.

A short gladhand release time is not as important for safety and, in fact, it is not desirable to have the gladhand release before the tractor brakes. Given these factors, NHTSA believes that a maximum release time slightly slower than proposed in the NPRM is appropriate, 0.75 second, which should minimize the need for design changes.

NHTSA does not agree with GM's comment that because the agency proposed 0.50/1.00 second maximum gladhand timing for towing trailers, the same timing is appropriate for all towing vehicles. As a general matter, it is easier to achieve faster gladhand timing for power units than for trailers, since the distance between the gladhand and air supply is much less. Indeed, as discussed below, towing trailers need a relay valve in order to meet the proposed 0.50/1.00 second requirements, while most power units do not need a relay valve to meet the more stringent 0.35/0.75 second requirements. While the

agency recognizes that it would be desirable for towing trailers to have even faster gladhand timing than proposed in the NPRM, it recognizes also that the design changes needed would be much more difficult for these vehicles.

In addressing the proposed gladhand timing requirements for towing trailers and dollies, some commenters raised the issue of whether relay valves should be required on dollies as well as towing trailers. Bendix commented that the proposed requirements would encourage the use of relay valves on both towing trailers and dollies. That company supported the proposed requirements, arguing that they result in improved combination performance regardless of what type of vehicle is purchased in the future. Bendix stated that if a fleet is purchasing new dollies to be used with existing trailers, the dolly will be able to improve multiple trailer combination timing performance, while for new trailer purchases, the trailer will be able to improve the multiple trailer combination timing performance. Fruehauf, on the other hand, commented that it is redundant to install these types of valves on all three units of a combination.

NHTSA agrees that in order to meet the proposed 0.50/1.00 second gladhand timing requirements, dollies would generally need to be equipped with a booster relay valve. Given that the other towed vehicles in a doubles combination would generally have booster relay valves under the requirements established by this notice, NHTSA does not believe that it is necessary for dollies to also be equipped with such devices. The air flow restriction through a dolly should not be significant enough to warrant a booster on each dolly. Also, dollies have historically been designed to be uncomplicated. While Bendix is correct that there would be some benefit from relay-valve-equipped dollies being used with old trailers, NHTSA does not believe that this potential benefit justifies requiring design changes to dollies that would be of marginal benefit when the dollies are used with new trailers. TTBRG tests of three in-service dollies without boosters showed gladhand application/release times of 0.49/1.04, 0.51/1.32, and 0.49/1.28 seconds. NHTSA believes that gladhand timing requirements of 0.55/1.10 seconds can be met by dollies without boosters. Many dollies already meet these requirements, and only minor plumbing changes should be necessary for other dollies.

After reviewing the comments, NHTSA believes that the proposed 0.50/1.00 second maximum gladhand timing requirements are appropriate for towing trailers other than dollies. While these requirements will generally require the use of booster relay valves, the VRTC tests indicate that the use of these devices will result in a substantial improvement in timing. The cost of adding a booster relay valve is estimated to be about $45 (parts only) per vehicle. The agency notes that commenters did not object to requiring booster valves for these vehicles.

NHTSA shares the concern of several commenters that the overall timing requirements proposed in the NPRM might not ensure combination vehicle stability in some situations because the brakes of a tractor with a very fast application time could still actuate well before the brakes of a trailer meeting the proposed requirements. While the agency agrees with the commenters that a minimum application time for tractors would take care of this problem, it believes that there is a better approach. As a general matter, faster brake application is better than slower application, so long as incompatibility doesn't become a problem. The disadvantage of a minimum application time is that it would prohibit fast tractors in situations where timing compatibility is not a problem, e.g., captive combinations (where a tractor always tows the same trailer) where the trailer has very fast timing. NHTSA believes that it is sufficient to require the actuation time at the gladhand to be faster than the timing of the tractor brake chambers and that the release time be fast enough to assure good modulation of the tractor brakes.

NHTSA is publishing a supplementary NPRM (SNPRM) proposing to require that the actuation time at the gladhand be at least as fast as the timing at the brake chambers. As a practical matter, such a requirement would not need to include any maximum actuation time at the gladhand, since that time would be limited by the maximum time specified for the brake chambers.

Given the importance of timing, NHTSA does not believe that the establishment of the timing requirements proposed by the May 1985 NPRM should be delayed. In this notice, the agency is establishing 0.35/0.75 second maximum actuation and release gladhand timing requirements for power units, 0.50/1.00 second requirements for towing trailers other than dollies, and 0.55/1.10 seconds requirements for dollies. However, in light of the SNPRM, the agency is also establishing an alternative option for towing vehicles of actuation at the gladhand being at least as fast as the timing at the brake chambers. For manufacturers choosing this option, the maximum brake chamber requirements established by this notice (discussed below) would ensure essentially the same maximum gladhand actuation time.

Brake Chamber Timing—Power Units

Standard No. 121 currently specifies that the brake application time for trucks and buses not exceed 0.45 second and that the brake release time for those vehicles not exceed 0.55 second. The NPRM proposed to lengthen the maximum brake application time for trucks designed to tow other air-braked

vehicles to 0.50 second, while retaining the current time of 0.45 second for other trucks and buses. The primary reason for proposing the change was to establish application times of 0.50 second across all units of a combination.

A number of commenters argued that there is no reason for towing trucks, non-towing trucks and buses to have different timing requirements. Echlin stated that the same manufacturers build these vehicles, often on the same production lines, and expressed concern that differing requirements could cause confusion, especially when a vehicle is converted from one kind to another. IH stated that it agrees with slowing down tractor application, but believes that it should be done for all vehicles. Bendix commented that the increase in actuation time is acceptable and would not increase stopping distances significantly. The Insurance Institute for Highway Safety (IIHS) expressed concern that the proposal would increase braking times and further increase the already large disparity in braking performance between cars and trucks. Freightliner stated that the proposed change may be insufficient. That company noted that ATA's recommended practice of a 0.30 second minimum application time is increasingly specified by its customers. It stated that the window created by ATA's 0.30 second time and the proposed 0.50 second time is insufficient.

After analyzing the comments on this issue, NHTSA has decided not to change the current 0.45 second application time for trucks and buses. While the potential impact on stopping distance would be relatively small, the agency believes that it should not relax a requirement closely related to stopping distance unless it is clearly necessary. In this case, the potential improvement in compatibility that would be achieved by permitting 0.05 second longer application time does not clearly outweigh the impact on stopping distance. Moreover, manufacturers are currently meeting the 0.45 second requirement without difficulty. NHTSA notes that Standard No. 121 does not specify the 0.30 second minimum application time cited by Freightliner and that, in any event, manufacturers can design their vehicles to meet both Standard No. 121 and ATA's recommended minimum application time.

Brake Chamber Timing—Trailers

Standard No. 121 currently specifies, using the old test rig, that the brake application time for trailers other than dollies not exceed 0.30 second and that the brake release time for those vehicles not exceed 0.65 second. Given the 0.29 second slower application time for the modified test rig, an equivalent requirement using the modified test rig would be approximately 0.60 second. The NPRM proposed a maximum time of 0.50 second, which appeared to be easily obtainable, for the purpose of requiring faster application time. Given the 0.48 second slower release time for the modified test rig, an equivalent requirement using the modified test rig would be approximately 1.20 seconds. The NPRM proposed a maximum time of 1.00 second, which also appeared to be easily obtainable, for the purpose of requiring faster release time.

For trailer converter dollies, Standard No. 121 currently specifies, using the old test rig, maximum application/release times of 0.35/0.65 second. The NPRM proposed the same maximum application/release times as for trailers, 0.50/1.00 second.

Bendix commented that the proposed actuation times for trailers, along with the slower test rig, is a big step in the right direction. That company argued that trailer brakes should come on as fast as possible to minimize time lag and trailer push. It stated that the use of ⅜-inch tubing to speed up the control signal time was verified by its testing, and that the times and combination time balance were improved even more dramatically with pilot relay valves on slide axle non-towing trailer systems. Bendix stated that while it does not suggest faster times, it believes the proposed 0.50/1.00 second times should not be increased. That company stated that it has been involved in specific field problems when trailer release time exceeds 1.00 second.

Fruehauf commented that it disagrees with the proposed 0.50/1.00 second maximum application/release times and recommended that the times be extended to 0.60/1.20 seconds. That company stated that the docket is clearly requesting a reduction in the application and release times of trailers. Fruehauf presented test data showing that a standard 48-foot trailer has application/release times of 0.216 second/0.573 second using the current mini-tractor and 0.579 second/1.194 seconds using the modified mini-tractor. That company argued that its experience with this trailer over the last ten years indicates that the trailer's timing is acceptable for safe highway operation. Fruehauf also presented test data showing that the trailer's timing, using the modified test rig, could be improved to 0.507 second/1.022 seconds by using smaller size tubing. That company asserted that the test results indicate that a simple change of total control line diameter will not allow a standard 48-foot tandem axle semitrailer to meet the 0.50/1.00 second proposal. Fruehauf acknowledged that it is possible to achieve the proposed timing requirements by using a booster type valve or relay, but argued that the addition of boost valves further complicates and potentially reduces the reliability of the brake system on trailers for marginal improvements in application and release times. That company argued that this, coupled with the additional sizeable economic penalty

caused by the addition of the boost valve and other necessary design changes, makes the addition of a boost valve unacceptable. Freuhauf also indicated that it tried to accomplish the proposed timing requirements by evaluating four delivery ported relay valves. Freuhauf stated, however, that while the use of such valves improved timing results, they did not result in sufficient margins to ensure that all of its production vehicles would comply with the proposed requirements.

TTMA commented that the proposed trailer timing requirements would require additional valves and complexity which is not justified. That organization stated that users complain that complexity in trailer air systems and differences in systems make it difficult to train maintenance personnel. TTMA stated that it supports the comment by Fruehauf to change the maximum timing requirements to 0.60 second apply and 1.20 seconds release.

Midland Brake commented that the maximum trailer timing requirements should be such that if a trailer with ½-inch tubing complies with the current requirements, it should comply with new requirements when the control line is changed from ½ inch to ⅜ inch. That commenter argued that this was the assumption in the NPRM. Midland stated that its testing shows that this would not be the case under the proposed 0.50/1.00 second requirements and argued that timing requirements at those levels would require additional system changes, at significant costs.

Theurer commented that it concurs that a ⅜-inch diameter control line can be substituted for the commonly used ½-inch line. That commenter stated, however, that there are many specialized trailers where the control line is ½ inch to meet the release timing requirements. Theurer stated that preliminary tests of the proposed test rig indicate that the problem is exacerbated. That company stated that if it turns out that some trailers require ½-inch diameter control lines to meet release timing requirements, it will probably build all units with the larger lines to minimize inventory, thereby negating whatever costs savings are attributable to the smaller line size. Theurer presented test data for a production 48-foot trailer, using a modified test rig, showing application/release times of 0.60 second/0.99 second using ½-inch line and 0.62 second/1.15 seconds using ⅜-inch line.

After evaluating the comments, NHTSA has decided to adopt maximum brake chamber application/release times of 0.60/1.20 seconds for non-towing trailers, 0.55/1.10 seconds for dollies, and 0.50/1.00 second for other towing trailers. At the time of the NPRM, the agency believed that the proposed 0.50/1.00 second requirements could be met by the last two categories of trailers without booster valves. However, based on its review of the comments and other available data, the agency now believes that adoption of the proposed requirements would necessitate the addition of a booster valve on many trailers in all three categories.

The brake chamber timing requirements for non-towing trailers and dollies are being set at a level that NHTSA believes can be met without the addition of a booster valve. The agency does not believe that the potential benefits associated with slightly faster timing requirements for these vehicles would justify the increased cost and complexity associated with designs incorporating a booster valve. As indicated above, the 0.60/1.20 seconds requirement for non-towing trailers is about equivalent to the existing requirement, taking into account the new test rig. The 0.55/1.10 seconds requirement for dollies is somewhat more stringent than the existing requirement, and may thus result in slightly faster timing.

NHTSA has concluded that the proposed 0.50/1.00 second maximum brake chamber timing requirements are appropriate for towing trailers other than dollies. As discussed above, the gladhand timing requirements established by this notice will generally necessitate the use of a booster valve for these vehicles. The same booster valve may be used to meet both the gladhand and brake chamber timing requirements. Thus, once the booster valve is included to improve gladhand timing, the vehicle can more easily meet faster brake chamber timing requirements. Moreover, there is a greater need for towing trailers to have faster brake chamber timing. It is industry practice to use towing trailers as both the first and second trailers in doubles combinations. When the towing trailer is used as the second trailer, it is typically serviced by a slower gladhand (that of the first trailer) than the first trailer or a typical single trailer (which are serviced by the power unit gladhand). Faster brake chamber timing for the second trailer helps offset the slower timing at the gladhand.

Eaton commented that the time differential between tractors and trailers should be decreased by reducing the trailer release time and thereby promoting energy balance improvements between tractors and trailers. The difference between these values reflects the agency's view that trailer release times that are slightly slower than the release time for towing vehicles do not degrade the stability of combination vehicles.

Other Comments

Eaton commented that it supports NHTSA's objective in improving the stability of combination vehicles during braking, but argued that brake energy balance, which is influenced by air system timing, must be considered. That commenter stated that tractor-trailer combination vehicles with unbal-

anced brake energy characteristics will develop significant brake maintenance costs because of a disproportionate braking workload distribution between the vehicles. Eaton stated that any proposed air system timing changes to Standard No. 121 should be thoroughly evaluated relative to the optimization of brake energy balance, as well as timing balance. As indicated earlier in this notice, NHTSA agrees that factors other than timing, such as brake torque and pneumatic balance, are also important factors in brake balance. The agency has considered these factors in evaluating air brake timing and believes that the improved timing performance will help optimize brake energy balance as a whole.

The Insurance Institute for Highway Safety argued that rather than concentrating all of its truck brake rulemaking on revising the current standard, NHTSA should begin rulemaking to establish a new standard for vehicles with air brakes that reflects state-of-the-art technology. That commenter also argued that any changes to the current standard should decrease timing delay requirements to reflect modern air brake technology. According to that organization, SAAB-Scania has an electrically actuated air brake system by Bosch, which can reduce actuation time by 50 percent and incorporates a fail-safe system that utilizes pneumatic triggering if the electrical system malfunctions. As discussed above, NHTSA believes that the requirements adopted by this notice will result in improved on-road performance for combination vehicles. The agency notes that it is currently engaged in research that will help it decide in the future whether to consider upgrading Standard No. 121 to reflect various new technologies.

Effective Date

The amendments made by this rule to the Code of Federal Regulations are effective June 2, 1989. The amendments require mandatory compliance effective May 3, 1991. After reviewing the comments, NHTSA has concluded that two years leadtime is needed to enable manufacturers to make the design changes needed to meet the new requirements. Between those dates, manufacturers have three options for meeting maximum application and maximum release timing requirements for trailer brake chambers: (1) meeting the existing requirements, using the existing test rig, (2) meeting the new requirements, using the modified test rig, or (3) meeting requirements approximately equivalent to the existing requirements but specifying use of the modified test rig. Permitting optional compliance with amendments that become effective at a later date promotes manufacturer flexibility without creating any adverse impacts. The purpose of the third option noted above is to facilitate early use by manufacturers of the modified test rig.

In consideration of the foregoing, 49 CFR Part 571 is amended as follows:

S5.3.3 of § 571.121 is revised to read as follows:

S5.3.3 *Brake actuation time.* Each service brake system shall meet the requirements of S5.3.3.1, except that, at the option of the manufacturer, vehicles manufactured before May 3, 1991, may meet the requirements specified in either S5.3.3.2 or S5.3.3.3.

S5.3.3.1(a) With an initial service reservoir system air pressure of 100 psi, the air pressure in each brake chamber shall, when measured from the first movement of the service brake control, reach 60 psi in not more than 0.45 second in the case of trucks and buses, 0.50 second in the case of trailers, other than trailer converter dollies, designed to tow another vehicle equipped with air brakes, 0.55 second in the case of trailer converter dollies, and 0.60 second in the case of trailers other than trailers designed to tow another vehicle equipped with air brakes. A vehicle designed to tow another vehicle equipped with air brakes shall meet the above actuation time requirement with a 50-cubic-inch test reservoir connected to the control line output coupling. A trailer, including a trailer converter dolly, shall meet the above actuation time requirement with its control line input coupling connected to the test rig shown in Figure 1.

(b) For a vehicle that is manufactured after May 3, 1991, and is designed to tow another vehicle equipped with air brakes, the pressure in the 50-cubic-inch test reservoir referred to in S5.3.3.1(a) shall, when measured from the first movement of the service brake control, reach 60 psi not later than the time the fastest brake chamber on the vehicle reaches 60 psi or, at the option of the manufacturer, in not more than 0.35 second in the case of trucks and buses, 0.55 second in the case of trailer converter dollies, and 0.50 second in the case of trailers other than trailer converter dollies.

S5.3.3.2 *(Optional requirement for vehicles manufactured before May 3, 1991).* With an initial service reservoir system air pressure of 100 psi, the air pressure in each brake chamber shall, when measured from the first movement of the service brake control, reach 60 psi in not more than 0.45 second in the case of trucks and buses, and 0.60 second in the case of trailers. A vehicle designed to tow another vehicle equipped with air brakes shall meet the above actuation time requirement with a 50-cubic-inch test reservoir connected to the control line output coupling. A trailer, including a trailer converter dolly, shall meet the above actuation time requirement with its control line input coupling connected to the test rig shown in Figure 1.

S5.3.3.3 *(Optional requirement for vehicles manufactured before May 3, 1991).* With an initial service reservoir system air pressure of 100 psi, the air

pressure in each brake chamber shall, when measured from the first movement of the service brake control, reach 60 psi in not more than 0.45 second in the case of trucks and buses, 0.35 second in the case of trailer converter dollies, and 0.30 second in the case of trailers other than trailer converter dollies. A vehicle designed to tow another vehicle equipped with air brakes shall meet the above actuation time requirement with a 50-cubic-inch test reservoir connected to the control line output coupling. A trailer, including a trailer converter dolly, shall meet the above actuation time requirement with its control line input coupling connected to the test rig shown in Figure 1(a).

3. S5.3.4 of § 571.121 is revised to read as follows:

S5.3.4 *Brake release time.* Each service brake system shall meet the requirements of S5.3.4.1, except that, at the option of the manufacturer, vehicles manufactured before May 3, 1991, may meet the requirements specified in either S5.3.4.2 or S5.3.4.3.

S5.3.4.1(a) With an initial service brake chamber air pressure of 95 psi, the air pressure in each brake chamber shall, when measured from the first movement of the service brake control, fall to 5 psi in not more than 0.55 second in the case of trucks and buses, 1.00 second in the case of trailers, other than trailer converter dollies, designed to tow another vehicle equipped with air brakes, 1.10 seconds in the case of trailer converter dollies, and 1.20 seconds in the case of trailers other than trailers designed to tow another vehicle equipped with air brakes. A vehicle designed to tow another vehicle equipped with air brakes shall meet the above release time requirement with a 50-cubic-inch test reservoir connected to the control line output coupling. A trailer, including a trailer converter dolly, shall meet the above release time requirement with its control line input coupling connected to the test rig shown in Figure 1.

(b) For vehicles designed to tow another vehicle equipped with air brakes, effective May 3, 1991, the pressure in the 50-cubic-inch test reservoir referred to in S5.3.4.1(a) shall, when measured from the first movement of the service brake control, fall to 5 psi in not more than 0.75 second in the case of trucks and buses, 1.10 seconds in the case of trailer converter dollies, and 1.00 second in the case of trailers other than trailer converter dollies.

S5.3.4.2 *(Optional requirement for vehicles manufactured before May 3, 1991).* With an initial service brake chamber air pressure of 95 psi, the air pressure in each brake chamber shall, when measured from the first movement of the service brake control, fall to 5 psi in not more than 0.55 second in the case of trucks and buses, and 1.20 seconds in the case of trailers. A vehicle designed to tow another vehicle equipped with air brakes shall meet the above release time requirement with a 50-cubic-inch test reservoir connected to the control line output coupling. A trailer, including a trailer converter dolly, shall meet the above release time requirement with its control line input coupling connected to the test rig shown in Figure 1.

S5.3.4.3 *(Optional requirement for vehicles manufactured before May 3, 1991).* With an initial service brake chamber air pressure of 95 psi, the air pressure in each brake chamber shall, when measured from the first movement of the service brake control, fall to 5 psi in not more than 0.55 second in the case of trucks and buses, and 0.65 second in the case of trailers. A vehicle designed to tow another vehicle equipped with air brakes shall meet the above release time requirement with a 50-cubic-inch test reservoir connected to the control line output coupling. A trailer, including a trailer converter dolly, shall meet the above release time requirement with its control line input coupling connected to the test rig shown in Figure 1(a).

4. A new Figure 1 is added following S5.3.4.3 to read as set forth below.

5. The existing Figure 1 is redesignated Figure 1(a).

6. A new Figure 3 is added following S6.1.13 to read as set forth below.

7. S6.1.13 of § 571.121 is revised to read as follows:

S6.1.13 *Trailer test rig.*

(a) The trailer test rig shown in Figure 1 is calibrated in accordance with the calibration curves shown in Figure 3. For the requirements of S5.3.3.1 and S5.3.4.1, the pressure in the trailer test rig reservoir is initially set at 100 psi for actuation tests and 95 psi for release tests.

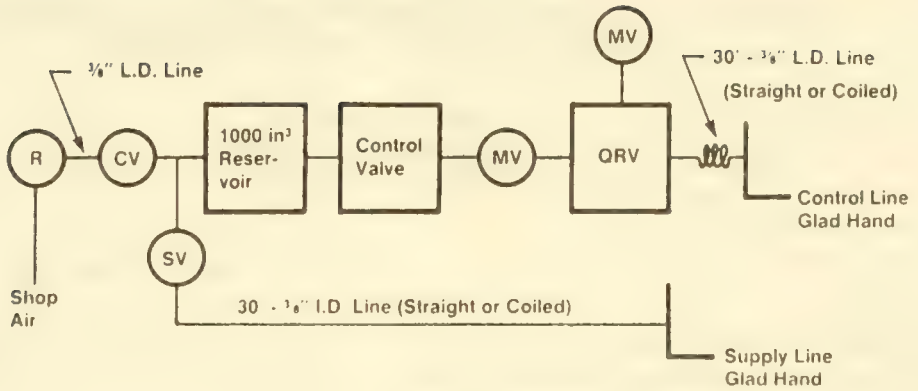
(b) The trailer test rig shown in Figure 1(a) is capable of increasing the pressure in a 50-cubic-inch reservoir from atmospheric to 60 lb/in^2 in 0.06 second, measured from the first movement of the service brake control to apply service brake pressure and of releasing pressure in such a reservoir from 95 to 5 lb/in^2 in 0.22 second measured from the first movement of the service brake control to release service brake pressure.

Issued on April 25, 1989

Diane K. Steed
Administrator

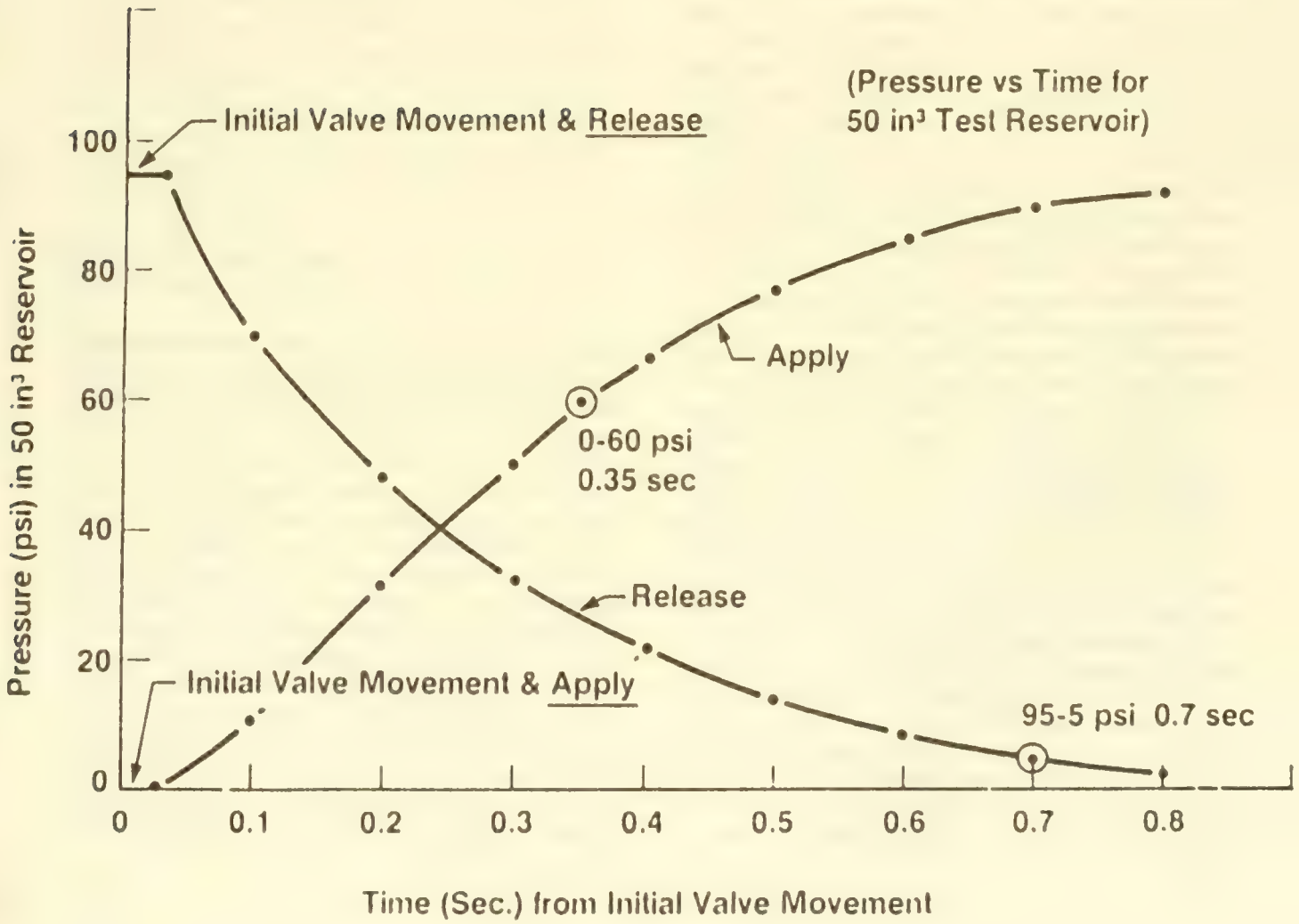
54 F.R. 18890
May 3, 1989

Figure 1. Trailer Test Rig



SV — Shut-off valve
R — Regulator (set at 100 psi for actuation tests and 95 psi for release test)
CV — Check Valve
MV — Metering Valve (Variable or Fixed)
QRV— Quick Release Valve

Figure 3. Calibration Curves



PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems
(Docket No. 87-04; Notice 5)
RIN 2127-AC 73

ACTION: Final rule; partial response to petitions for reconsideration; delay of effective date.

SUMMARY: In a final rule published in the *Federal Register* (53 FR 7931) on March 11, 1988, NHTSA amended Standard No. 121, *Air Brake Systems,* to clarify the standard's parking brake requirements. The amendments permitted manufacturers to comply with the new requirements as an alternative to complying with the requirements being superseded effective April 11, 1988, and required mandatory compliance with those requirements effective September 7, 1988 (180 days after publication). In partial response to two petitions for reconsideration, NHTSA issued a notice on September 9, 1988, amending the standard by extending for one year (i.e., until September 7, 1989) the period for which manufacturers may comply with either the earlier or new requirements. Today's notice amends the standard by extending this period for one more year (i.e., until September 7, 1990). The agency expects to provide a response to the two petitions for reconsideration later this year.

DATES: The amendments made by this rule are effective July 17, 1989.

SUPPLEMENTARY INFORMATION: In a final rule published in the *Federal Register* (53 FR 7931) on March 11, 1988, NHTSA amended Standard No. 121, *Air Brake Systems,* to clarify the standard's parking brake requirements. The amendments required actuation of a mechanical means for holding the parking brakes within three seconds after operation of the parking brake control. (For trailers, such actuation was required within three seconds after venting to the atmosphere of the front supply line connection is initiated.) In addition, vehicles were required to be capable of meeting requirements related to parking brake retardation force within the three-second period. The amendments also required that the grade holding test (or alternative drawbar test) be met with only the mechanical means of holding the parking brakes in operation. The amendments required mandatory compliance effective September 7, 1988 (180 days after publication), while permitting manufacturers to comply with the new requirements as an alternative to complying with the requirements being superseded effective April 11, 1988.

The agency stated in the March 1988 notice that it believed all parking brakes currently being sold complied with the amendments being adopted. The agency also stated its belief that since any necessary certification could be accomplished by engineering analysis and simple tests, 180 days provided a sufficient time for that purpose.

NHTSA received two petitions for reconsideration. One of the petitioners, Volvo GM Heavy Truck Corporation, requested that the agency rescind the application of the timing amendment to tandem trucks with spring brakes, and that one of the specified conditions for the timing tests (initial reservoir system pressure of 100 psi) be removed. That company asserted that compliance with the standard as amended is not practicable and is unreasonable. Volvo GM suggested that NHTSA was generally correct in stating that the rule did not affect parking brakes currently being sold, but that the agency had overlooked a significant segment of the vehicle population, heavy tandem trucks. That company submitted test results for two heavy trucks. According to Volvo GM, "one exceeds the limit and the other does not contain compliance margins sufficient to accommodate manufacturing tolerances." That company also argued that the test condition which specifies initial reservoir system pressure of 100 psi is design restrictive.

The other petitioner, Navistar International Transportation Corporation, stated that it has confirmed that in its parking brake systems the air pressure drops to zero within the allotted time. That company stated that based upon this fact and the agency's statements in the preamble, it believes that its vehicles comply with the timing requirements of the final rule. Navistar International added, however, that after actuation of the control knob, experience has shown that as much as one revolution of

the braked wheels may be necessary to permit the brake shoes to be sufficiently energized to reach peak torque. That company stated that this "wrap up" process can take several seconds, depending on brake characteristics and driver finesse. Navistar International stated that should this "wrap up" movement not be considered permissible by the agency, it requested that its submission be considered a petition for reconsideration of the final rule, to permit the "wrap up" movement.

As is clear from the preamble to the March 1988 final rule, NHTSA did not believe that the amendments would require changes in any parking brakes currently being sold. NHTSA is therefore concerned that the petitions raise the possibility that, contrary to the agency's belief in establishing the March 1988 final rule, some current parking brakes may not comply with the amendments that become effective, on a mandatory basis, on September 7, 1989. The agency has not yet completed its analysis of the two petitions for rulemaking due to the complexity of the issues. Although NHTSA expects to respond to the petitions by the end of the year, mandatory compliance with the new requirements is scheduled to become effective before then, on September 7, 1989. The Motor Vehicle Manufacturers Association, in a February 20, 1989, letter to NHTSA, indicated that in the absence of either an immediate clarification of the rule, or a delay in the effective date of the mandatory standard, the manufacturers' ability to determine compliance with the standard as written could be seriously undermined.

Accordingly, in partial response to the two petitions for reconsideration, NHTSA has decided to delay, for one additional year, the time the amendments become effective on a mandatory basis. This delay in effective date will permit the agency to complete its analysis of the arguments made by the petitioners, and provide a further response to the petitions. Thus, manufacturers may continue until September 7, 1990, to comply with either the March 1988 requirements or the requirements that were superseded by that notice.

NHTSA finds for good cause that it is in the public interest to establish an effective date 30 days after the publication of this notice for the amendments made by today's notice. The amendments impose no new requirements but instead increase manufacturer flexibility by extending the time they may comply with the alternative parking brake requirements. As discussed above, the new September 7, 1990, effective date will give sufficient time for the agency to complete its analysis of the arguments made by the petitioners, and provide a further response to the petitions. The new compliance date will also provide manufacturers with an adequate opportunity to take any steps needed to comply following the agency's forthcoming decisions on the petitions for reconsideration.

In consideration of the foregoing, 49 CFR Part 571 is amended as follows:

S5.6.3 is revised to read as follows:

S5.6.3 *Application and holding.* Each parking brake system shall meet the requirements of S5.6.3.1 through S5.6.3.4, except that, at the option of the manufacturer, vehicles manufactured before September 7, 1990, may meet the requirements specified in S5.6.3.5.

S5.6.3.1 The parking brake system shall be capable of achieving the minimum performance specified either in S5.6.1 or S5.6.2 with any single leakage-type failure, in any other brake system, of a part designed to contain compressed air or brake fluid (except failure of a component of a brake chamber housing).

S5.6.3.2 For trucks and buses, with an initial reservoir system pressure of 100 psi and, if designed to tow a vehicle equipped with air brakes, with a 50-cubic-inch test reservoir connected to the supply line coupling, at all times after three seconds from the time of actuation of the parking brake control, the parking brake system shall achieve the minimum parking retardation performance specified in S5.6.3.1. For trailers, with an initial supply line pressure of 100 psi and, if designed to tow a vehicle equipped with air brakes, with a 50-cubic-inch test reservoir connected to the supply line coupling, at all times after three seconds from the time venting to the atmosphere of the front supply line connection is initiated, the parking brake system shall achieve the minimum retardation performance specified in S5.6.3.1.

S5.6.3.3 A mechanical means shall be provided which is capable, with zero air pressure and zero fluid pressure in the vehicle and without electrical power, of holding the parking brake application at a level meeting the minimum parking retardation performance specified in S5.6.3.1.

S5.6.3.4 For trucks and buses, with an initial reservoir system pressure of 100 psi and, if designed to tow a vehicle equipped with air brakes, with a 50-cubic-inch test reservoir connected to the supply line coupling, no later than three seconds from the time of operation of the parking brake control, the mechanical means referred to in S5.6.3.3 shall be actuated. For trailers, with an initial supply line pressure of 100 psi and, if designed to tow a vehicle equipped with air brakes, with a 50-cubic-inch test reservoir connected to the supply line coupling, no later than three seconds from the time venting to the atmosphere of the front supply line connection is initiated, the mechanical means referred to in S5.6.3.3 shall be actuated.

S5.6.3.5 *(Optional requirement for vehicles manufactured before September 7, 1990).* The parking

brake system shall be capable of achieving the minimum performance specified either in S5.6.1 or S5.6.2 with any single leakage-type failure, in any other brake system, of a part designed to contain compressed air or brake fluid (except failure of a component of a brake chamber housing). Once applied, the parking brakes shall be held in the applied position solely by mechanical means.

Issued on June 9, 1989

Jeffrey R. Miller
Acting Administrator

54 F.R. 25460
June 15, 1989

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 121

Air Brake Systems
(Docket No. 88-03; Notice 2)
RIN: 2127-AD76

ACTION: Final rule.

SUMMARY: Standards No. 105, *Hydraulic Brake Systems*, and No. 121, *Air Brake Systems*, specify procedures for the burnishing or "breaking-in" of a vehicle's brakes. Under the two standards' test procedures, a vehicle's brakes are burnished prior to conducting some of the performance tests for vehicle braking. Today's notice amends these standards to specify, for all types of vehicles, that automatic brake adjusters on vehicles so equipped must remain operational during the burnish procedures and subsequent brake tests.

EFFECTIVE DATE: This rule will become effective September 1,1991. Optional compliance is permitted October 30, 1989

SUPPLEMENTARY INFORMATION: Standards No. 105, *Hydraulic Brake Systems*, and No. 121, *Air Brake Systems*, specify procedures for the burnishing or "breaking-in" of a vehicle's brakes. Under the two standards' test procedures, a vehicle's brakes are burnished prior to conducting some of the performance tests for vehicle braking.

On July 27, 1983, NHTSA published in the *Federal Register* (48 FR 29560) a notice of proposed rulemaking (NPRM) to amend the burnish procedures of Standards No. 105 and No. 121, as they apply to heavy vehicles. One of the proposed changes concerned automatic adjusters. The agency noted that Standard No. 105 specifies for hydraulic-braked vehicles that automatic adjusters can be disconnected prior to the burnish procedure, but if disconnected, they must remain disconnected throughout the brake tests. If the devices are not disconnected, a brake adjustment is permitted at the end of the burnish and all remaining tests are performed with the adjusters connected. On the other hand, NHTSA has interpreted Standard No. 121 to require for air-braked vehicles that automatic adjusters not be disconnected. Today's final rule affirms that interpretation. The July 1983 NPRM proposed to specify in both standards, for heavy vehicles, that automatic adjusters remain operational during brake tests. Under that proposal, vehicles with gross vehicle weight ratings (GVWR's) of 10,000 pounds or less would continue to have been permitted to be tested with automatic adjusters deactivated.

Some of the commenters on the June 1983 NPRM argued that there is no reason to treat vehicles with a GVWR in excess of 10,000 pounds differently from vehicles with a GVWR of 10,000 pounds or less. These commenters stated that if deactivation of automatic adjusters is permitted for light vehicles, heavier vehicles should be offered the same option.

On May 23, 1985, NHTSA published in the *Federal Register* (50 FR 21313) a supplemental NPRM (SNPRM) concerning a number of the issues raised by commenters in response to the June 1983 notice. With respect to automatic adjusters, the agency stated that it agreed with the implicit point that the reasons for and against permitting the deactivation of automatic adjusters apply equally to all vehicles with those adjusters, regardless of size. NHTSA announced in that notice that rather than address the question of the deactivation of automatic brake adjusters in a piecemeal fashion, it would instead issue a notice addressing that issue for all vehicles.

On January 14, 1988, NHTSA published in the *Federal Register* (53 FR 934) an NPRM proposing to amend Standards No. 105 and No. 121 to specify, for all types of vehicles, that automatic brake adjusters remain operational during the burnish procedures and subsequent brake tests. The proposal allowed for a post-burnish brake adjustment in accordance with the manufacturer's recommendations as furnished to the purchaser (i.e., in the owner's manual). Nine comments were received. Of these, seven commenters expressed general concurrence with the proposed approach, and two objected to it.

Austin Rover, Volkswagen of America, the Heavy Duty Manufacturers Association, and Bendix Heavy Vehicle Systems, (commenting on Standard No. 121 only) expressed support for the proposal

General Motors and Chrysler supported the proposal, but felt it was inappropriate to require the specific brake adjustment information in the owner's manual. NHTSA agrees that requiring this technical information in the owner's manual serves little or no useful purpose to the consumer. The final rule has been revised to specify that after burnishing, the brakes are to be adjusted in accordance with the manufacturer's recommendation. This will provide manufacturers with flexibility to specify recommended adjustments in service literature, rather than being required to provide that information in the owner's manual

General Motors, in a comment that is beyond the scope of today's rulemaking, also suggested that NHTSA issue an SNPRM to clarify the provisions of Standards No. 105 and No. 121 that are applicable to various types of vehicles. Chrysler recommended that the wording of S7.4.1.2 and S7.4.2.2 in Standard No. 105 be revised to eliminate language addressing the lock out of automatic adjusters. NHTSA eliminated the language in S7.4.2.2 in a March 14, 1988, final rule, Burnish Procedures for Heavy Duty Vehicles, (53 FR 8190). Today's final rule eliminates the language referring to adjuster lock out contained in S7.4.1.2.

Rockwell International and Bendix Heavy Vehicle Systems both recommended that NHTSA allow manual adjustment of automatic adjusters during burnish procedures under Standard No. 121. Although these comments are outside the scope of today's rulemaking, NHTSA notes that such adjustments are not precluded by the existing regulatory language. The March 1988 rule provides, with regard to heavy vehicles, that the brakes be adjusted in accordance with the manufacturer's recommendations at specified intervals during the burnish procedure, as well as at the end of the procedure. Under that rule, automatic adjusters are permitted to be manually adjusted at the same times as other types of brake adjustments during burnish. *See*, 53 FR 8201-2. That requirement is not being changed by today's rule.

Rockwell also suggested that S5.3 of Standard No. 121 be revised to allow the readjustment of brakes prior to each test sequence. This comment is beyond the scope of today's rulemaking.

Freightliner Corp. indicated that permitting different standards for vehicles with automatic, as opposed to manual, brake adjusters unfairly penalizes manufacturers using automatic adjusters. Freightliner also provided a comment outside the scope of today's rulemaking, relating to brake adjustment intervals during brake burnishing. This issue was addressed in the March 1988 final rule.

Ford and Bendix Chassis and Brake Division (a supplier of passenger car brake components to Ford) submitted comments opposing the proposal to prohibit the deactivation of automatic adjusters during burnishing and testing under Standard No. 105. Ford believed that the proposed revisions had no relation to improved safety, would provide no benefit to Ford's customers, and would require the redesign of brakes on various Ford vehicles, resulting in additional costs. Bendix pointed out that its brakes are subject to over-adjustment when the automatic adjusters are activated during the burnishing and testing, although it is not aware of any over-adjustment problems occurring during actual use by customers. Bendix also explained that redesign of its brakes to include an automatic adjuster that would be insensitive to the type of stops required by Standard 105 would require a major retooling effort and a substantial test and development program. Finally, Bendix stated that the increased costs of such an effort were not justified, and that the proposal should be adopted because it results in no benefit to the public, or improvement in safety.

Since the close of the public comment period on the NPRM, NHTSA has been advised by Ford that it is changing the designs of its brake systems so that they will no longer require deactivation of the automatic adjusters during burnishing and testing. As a result, Ford has indicated that it no longer objects to the revised standard as proposed as long as adequate lead time is provided. The final rule provides a lead time which NHTSA believes should be adequate for all manufacturers, including Ford.

In the past, problems were sometimes experienced with automatic brake adjusters during burnish procedures. For some vehicles, the swelling of linings at high temperatures made it difficult to complete the burnish procedures, an occurence which led the agency to permit automatic adjusters to be disconnected during testing under Standard No. 105. However, newer designs for linings and automatic adjusters have essentially eliminated these problems, particularly for lighter vehicles. NHTSA is aware of only one manufacturer, Ford, which currently specifies that the automatic adjusters on any of its vehicles with a GVWR of 10,000 pounds or less be deactivated for purposes of brake testing. However, as noted above, Ford has notified NHTSA of its intention to modify the brakes on these models to eliminate the need for deactivation.

One of the purposes behind the various test conditions and procedures specified in Standards No. 105 and No. 121 is to test vehicles as they will perform when used on the road. Since automatic brake adjusters are operational during normal use, specifying that they be operational during brake testing helps approximate real-world conditions and provides a better test of real-world performance.

While it may not be considered normal or typical, the potential exists for motorists to drive their vehicles in a manner that could result in the automatic adjusters over-adjusting, an occurence which could lead to unexpected brake overheating and thus fade. NHTSA

believes it is important to amend the rule to reduce the possibility of over-adjusting.

As indicated above, the March 1988 final rule did not cover burnish procedures for vehicles with a GVWR of 10,000 pounds or less. Under today's rule, manual adjustment for vehicles with a GVWR of 10,000 pounds or less is permitted only at the end of the burnish procedure. This is consistent with Standard No. 105's current requirement for vehicles whose automatic adjusters are not deactivated. It is also consistent with the agency's proposal for an internationally harmonized passenger car brake standard. See 52 FR 1474, January 14, 1987.

NHTSA believes that compliance with today's rule will not impose an unreasonable burden upon Ford or any other manufacturer. The necessary designs and technology needed to overcome any tendency toward over-adjusting are available inexpensively and are in use by virtually all other manufacturers. NHTSA has estimated that the cost of adding the improved adjuster design to be no more than $.60 per vehicle. In addition, neither Ford nor Bendix submitted any data showing that over-adjustment problems during burnish and testing still exist with the Ford brake system. NHTSA believes that requiring adjusters to be activated during testing and burnishing procedures is appropriate and promotes the agency's goal of improved motor vehicle safety. Finally, as discussed above, Ford has indicated its intention to change its existing brake designs voluntarily so as to eliminate the need for deactivation of the adjusters. Since Ford has been the last manufacturer to avail itself of the provisions allowing lockout of adjusters, there appears to be no reason to retain these provisions.

Today's rule will become effective on September 1, 1991. Optional compliance will be permitted effective 30 days after publication in the *Federal Register*. The time period will enable manufacturers to conduct compliance testing, as well as make any minor changes to their vehicles that might be necessary in order to ensure compliance.

PART 571—[AMENDED]

In consideration of the foregoing, 49 CFR Part 571-105 is amended as follows:

S7 is revised to read as follows:

S7. *Test procedures and sequence.* Each vehicle shall be capable of meeting all the applicable requirements of S5. when tested according to the procedures and in the sequence set forth below, without replacing any brake system part or making any adjustments to the brake system other than as permitted in burnish and reburnish procedures and in S7.9 and S7.10. (For vehicles only having to meet the requirements of S5.1.2 and S5.1.3 in section S5.1, the applicable test procedures and sequence are S7.1, S7.2, S7.4, S7.9, S7.10 and S7.18. However, at the option of the manufacturer, the following test procedures and sequence may be conducted: S7.1, S7.2, S7.3, S7.4, S7.5, S7.6, S7.7, S7.8, S7.9, S7.10 and S7.18. The choice of this option shall not be construed as adding to the requirements specified in S5.1.2 and S5.1.3.) For vehicles manufactured before September 1, 1991, automatic adjusters may be locked out, at the option of the manufacturer, when the vehicle is prepared for testing. If this option is selected, adjusters must remain locked out for the entire sequence of tests. For vehicles manufactured on or after September 1, 1991, automatic adjusters must remain activated at all times. A vehicle shall be deemed to comply with the stopping distance requirements of S5.1 if at least one of the stops at each speed and load specified in each of S7.3, S7.5, S7.8, S7.9, S7.10, S7.15, or S7.17 (check stops) is made within a stopping distance that does not exceed the corresponding distance specified in Table II. When the transmission selector control is required to be in neutral for a deceleration, a stop or snub shall be obtained by the following procedures: (1) Exceed the test speed by 4 to 8 mph; (2) close the throttle and coast in gear to approximately 2 mph above the test speed; (3) shift to neutral; and (4) when the test speed is reached, apply the service brakes.

* * * * *

3. S7.4.1.2 is revised to read as follows:

S7.4.1.2 *Brake adjustment—post burnish.* After burnishing, adjust the brakes in accordance with the manufacturer's published recommendations.

4. S7.4.2.2 is revised to read as follows:

S7.4.2.2 *Brake adjustment—post burnish.* After burnishing, adjust the brakes in accordance with the manufacturer's published recommendations.

Section 571.121 [Amended]

5. S6 is revised to read as follows:

S6. *Conditions.* The requirements of S5 shall be met by a vehicle when it is tested according to the conditions set forth below, without replacing any brake system part or making any adjustments to the brake system except as specified. Unless otherwise specified, where a range of conditions is specified, the vehicle must be capable of meeting the requirements at all points within the range. On vehicles equipped with automatic brake adjusters, the automatic brake adjusters must remain activated at all times.

Issued on September 26, 1989.

Jeffrey R. Miller
Acting Administrator

54 F.R. 40080
September 29, 1989

MOTOR VEHICLE SAFETY STANDARD NO. 121
Air Brake Systems—Trucks, Buses and Trailers

(Docket Nos. 70-16, 70-17; Notice No. 2)

S1. Scope. This standard establishes performance and equipment requirements for braking systems on vehicles equipped with air brake systems.

S2. Purpose. The purpose of this standard is to insure safe braking performance under normal and emergency conditions.

S3. Application. This standard applies to trucks, buses, and trailers equipped with air brake systems. However, it does not apply to:

[(a) Any trailer that has a width of more than 102.36 inches with extendable equipment in the fully retracted position and is equipped with two short track axles in a line across the width of the trailer.

(b) Any vehicle equipped with an axle that has a GAWR of 29,000 pounds or more;

(c) Any truck or bus that has a speed attainable in 2 miles of not more than 33 mph;

(d) Any truck that has a speed attainable in 2 miles of not more than 45 mph, an unloaded vehicle weight that is not less than 95 percent of its GVWR, and no capacity to carry occupants other than the driver and operating crew;

(e) Any trailer that has a GVWR of more than 120,000 pounds and whose body conforms to that described in the definition of "Heavy hauler trailer" set forth in S4;

(f) Any trailer that has an unloaded vehicle weight which is not less than 95 percent of its GVWR; and

(g) Any load divider dolly.

Notwithstanding any language to the contrary, sections S5.3.1, S5.3.1.1, S5.3.2, S5.3.2.1, S5.3.2.2, S5.7.1, S5.7.3(a) and S5.7.3(b) of this standard are not applicable to trucks and trailers, and section S5.3.1 of this standard is not applicable to buses. **(53 F.R. 30680—August 15, 1988. Effective: September 14, 1988)]**

S4. Definitions.

"Agricultural commodity trailer" means a trailer that is designed to transport bulk agricultural commodities in off-road harvesting sites and to a processing plant or storage location, as evidenced by skeletal construction that accommodates harvest containers, a maximum length of 28 feet, and an arrangement of air control lines and reservoirs that minimizes damage in field operations.

"Air brake system" means a system that uses air as a medium for transmitting pressure or force from the driver control to the service brake, but does not include a system that uses compressed air or vacuum only to assist the driver in applying muscular force to hydraulic or mechanical components.

"Antilock system" means a portion of a service brake system that automatically controls the degree of rotational wheel slip at one or more road wheels of the vehicle during braking.

"Auto transporter" means a truck and a trailer designed for use in combination to transport motor vehicles, in that the towing vehicle is designed to carry cargo at a location other than the fifth wheel and to load this cargo only by means of the towed vehicle.

"Heavy hauler trailer" means a trailer with one or more of the following characteristics:

(1) Its brake lines are designed to adapt to separation or extension of the vehicle frame; or

(2) Its body consists only of a platform whose primary cargo-carrying surface is not more than 40 inches above the ground in an unloaded condition, except that it may include sides that are designed to be easily removable and a permanent "front-end structure" as that term is used in § 393.106 of this title.

"Initial brake temperature" means the average temperature of the service brakes on the hottest axle of the vehicle 0.2 miles before any brake application.

"Load divider dolly" means a trailer composed of a trailer chassis and one or more axles, with no solid bed, body, or container attached, and which is designed exclusively to support a portion of the load on a trailer or truck excluded from all the requirements of this standard.

"Pulpwood trailer" means a trailer that is designed exclusively for harvesting logs or pulpwood and constructed with a skeletal frame with no means for attachment of a solid bed, body, or container, and with an arrangement of air control lines and reservoirs designed to minimize damage in off-roads operations.

"Skid number" means the frictional resistance of a pavement measured in accordance with American Society for Testing and Materials Method "E-274-70 (as revised July 1974)" at 40 mph, omitting water delivery as specified in paragraphs S7.1 and 7.2" of that method.

"Straddle trailer" means a trailer that is designed to transport bulk agricultural commodities from the harvesting location as evidenced by a framework that is driven over the cargo and lifting arms that suspend the cargo for transit.

"Speed attainable in two miles" means the speed attainable by accelerating at maximum rate from a standing start for two miles on a level surface.

S5. Requirements. Each vehicle shall meet the following requirements under the conditions specified in S6.

S5.1 Required equipment—trucks and buses. Each truck and bus shall have the following equipment:

S5.1.1 Air Compressor. An air compressor of sufficient capacity to increase air pressure in the supply and service reservoirs from 85 pounds per square inch (psi) to 100 (psi) when the engine is operating at the vehicle manufacturer's maximum recommended rpm within a time, in seconds, determined by the quotient

$$\frac{\text{actual reservoir capacity} \times 25}{\text{required reservoir capacity}}$$

S5.1.2 Reservoirs. One or more service reservoir systems, from which air is delivered to the brake chambers, and either an automatic condensate drain valve for each service reservoir or a supply reservoir between the service reservoir system and the source of air pressure.

S5.1.2.1 The combined volume of all service reservoirs and supply reservoirs shall be at least twelve times the combined volume of all service brake chambers at maximum travel of the pistons or diaphragms. However, the reservoirs on the truck portion of an auto transporter need not meet this requirement

S5.1.2.2 Each reservoir shall be capable of withstanding an internal hydrostatic pressure of five times the compressor cutout pressure or 500 p.s.i., whichever is greater for 10 minutes.

S5.1.2.3 Each service reservoir system shall be protected against loss of air pressure due to failure or leakage in the system between the service reservoir and the source of air pressure, by check valves or equivalent devices whose proper functioning can be checked without disconnecting any air line or fitting.

S5.1.2.4 Each reservoir shall have condensate drain valve that can be manually operated.

S5.1.3 Towing vehicle protection system. If the vehicle is intended to tow another vehicle equipped with air brakes, a system to protect the air pressure in the towing vehicle from the effects of a loss of air pressure in the towed vehicle.

S5.1.4 Pressure gauge. A pressure gauge in each service brake system, readily visible to a person seated in the normal driving position, that indicates the service reservoir system air pressure. The accuracy of the gauge shall be within plus or minus 7 percent of the compressor cut-out pressure.

S5.1.5 Warning signal. A signal, other than a pressure gauge, that gives a continuous warning to a person in the normal driving position when the ignition is in the "on" or "run" position and the air pressure in the service reservoir system is below 60 psi. The signal shall be either visible within the driver's forward field of view, or both audible and visible.

S5.1.6 Antilock warning signal. A signal on each vehicle equipped with an antilock system that gives a continuous warning to a person in the normal driving position when the ignition is in the "on" or "run" position in the event of a total electrical failure of the antilock system. The signal shall be either visible within the driver's forward

field of view or both audible, for a duration of at least 10 seconds, and continuously visible. The signal shall operate in the specified manner each time the ignition is returned to the "on" or "run" position.

S5.1.7 Service brake stop lamp switch. A switch that lights the stop lamps when the service brake control is statically depressed to a point that produces a pressure of 6 psi or less in the service brake chambers.

S5.1.8 Brake distribution. Each vehicle shall be equipped with a service brake system acting on all wheels.

S5.2 Required equipment—trailers. Each trailer shall have the following equipment:

S5.2.1 Reservoirs. One or more reservoirs to which the air is delivered from the towing vehicle.

S5.2.1.1 A reservoir shall be provided that is capable, when pressurized to 90 psi, of releasing the vehicle's parking brakes at least once and that is unaffected by a loss of air pressure in the service brake system.

S5.2.1.2 Total service reservoir volume shall be at least eight times the combined volume of all service brake chambers at maximum travel of the pistons or diaphragms. However, the reservoirs on a heavy hauler trailer and on the trailer portion of an auto transporter need not meet this requirement.

S5.2.1.3 Each reservoir shall be capable of withstanding an internal hydrostatic pressure of 500 p.s.i. for 10 minutes.

S5.2.1.4 Each reservoir shall have a condensate drain valve that can be manually operated.

S5.2.1.5 Each service reservoir shall be protected against loss of air pressure due to failure or leakage in the system between the service reservoir and its source of air pressure by check valves or equivalent devices.

S5.2.2 Brake distribution. Each trailer shall be equipped with a service brake system acting on all wheels.

S5.3 Service brakes—road tests. The service brake system on each truck and bus shall, under the conditions of S6.1, meet the requirements of S5.3.1, S5.3.3, and S5.3.4 when tested without adjustments other than those specified in this standard. The service brake system on each trailer shall, under the conditions of S6.1, meet the requirements of S5.3.2, S5.3.3, and S5.3.4 when tested without adjustments other than those specified in this standard. However, a heavy hauler trailer and the truck and trailer portions of an auto transporter need not meet the requirements of S5.3.

S5.3.1 Stopping distance—trucks and buses. [When stopped six times for each combination of weight, speed, and road condition specified in S5.3.1.1, in the sequence specified in Table I, the vehicle shall stop at least once in not more than the distance specified in Table II, measured from the point at which movement of the service brake control begins, without any part of the vehicle leaving the roadway and without lockup of any wheel at speeds above 10 mph except for: **(52 F.R. 19872—May 28, 1987. Effective: June 29, 1987)**]

(a) Controlled lockup of wheels allowed by an antilock system, or

(b) Lockup of wheels on nonsteerable axles other than the two rearmost nonliftable, nonsteerable axles on a vehicle with more than two nonsteerable axis.

Table I.—Stopping Sequence

1. Burnish
2. Control trailer service brake stops at 60 mph (for truck-tractors tested with a control trailer in accordance with S6.1.10.6).
3. Control trailer emergency brake stops at 60 mph (for truck-tractors tested with a control trailer in accordance with S6.1.10.7).
4. Stops with vehicle at gross vehicle weight rating:
   (a) 20 mph service brake stops on skid number of 81.
   (b) 60 mph service brake stops on skid number of 81.
   (c) 20 mph service brake stops on skid number of 30.
   (d) 20 mph emergency brake stops on skid number of 81.
   (e) 60 mph emergency brake stops on skid number of 81.
5. Parking brake test with vehicle loaded to gross vehicle weight rating.
6. Stops with vehicle at unloaded weight plus 500 lb.:
   (a) 20 mph service brake stops on skid number of 81.

(b) 60 mph service brake stops on skid number range 81.

(c) 20 mph service brake stops on skid number range 30.

(d) 20 mph emergency brake stops on skid number range 81.

(e) 60 mph emergency brake stops on skid number range 81.

7. Parking brake test with vehicle at unloaded weight plus 500 lb.

S5.3.1.1 Stop the vehicle from 60 m.p.h. and 20 mph on a surface with a skid number of 81, and from 20 mph on a wet surface with a skid number of 30, with the vehicle (a) loaded to its gross vehicle weight rating, and (b) at its unloaded vehicle weight plus 500 pounds (including driver and instrumentation). If the speed attainable in 2 miles is less than 60 mph, the vehicle shall stop from a speed in Table II that is 4 to 8 mph less than the speed attainable in 2 miles.

Table II.—Stopping Distance in Feet

	Service Brake stopping distance		Emergency Brake stopping distance	
Vehicle speed in miles per hour	Column 1 Skid Skid No. 81	Column 2 Skid No. 30	Column 3 Skid No. 81	Column 4
20	35	60	83	85
25	53		123	131
30	75		170	186
35	101		225	250
40	131		288	325
45	165		358	409
50	203		435	504
55	246		520	608
60	293		613	720

S5.3.2. Stopping capability—trailers. When tested at each combination of weight, speed, and road condition specified in S5.3.2.1, in the sequence specified in Table I, with air pressure of 90 psi in the control line and service reservoir system and with no application of the towing vehicle's brakes, a trailer shall stop without any part of the trailer leaving the roadway and without lockup of any wheel at speeds above 10 mph, except for

(a) Controlled lockup of wheels allowed by an antilock system; or

(b) Lockup of wheels on nonsteerable axles other than the two rearmost nonliftable; nonsteerable axles on a trailer with more than two nonsteerable axles; or

(c) In the case of an axle system having more than four wheels, lockup of any wheel other than the outermost wheel at each end of the axle system.

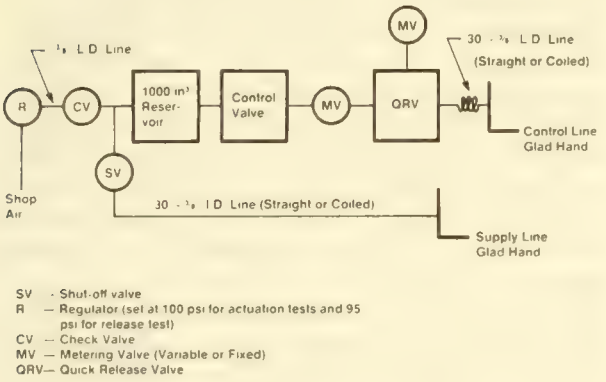
S5.3.2.1 Stop the vehicle from 60 m.p.h. and 20 mph on a surface with skid number of 81, and from 20 mph on a wet surface with a skid number 30, with the vehicle (a) loaded to its gross vehicle weight rating, and (b) at its unloaded vehicle weight plus 500 pounds (including instrumentation).

S5.3.2.2 When stopped in accordance with S5.3.2, a pulpwood trailer need not meet the requirements relating to wheel lockup, but must nevertheless meet the requirements of staying within the 12-foot lane.

S5.3.3 Brake actuation time. [Each service brake system shall meet the requirements of S5.3.3.1, except that, at the option of the manufacturer, vehicles manufactured before May 3, 1991 may meet the requirements specified in either S5.3.3.2 or S5.3.3.3

[**S5.3.3.1** (a) With an initial service reservoir system air pressure of 100 psi, the air pressure in each brake chamber shall, when measured from the first movement of the service brake control, reach 60 p.s.i. in not more than 0.45 seconds in the case of trucks and buses, 0.50 seconds in the case of trailers, other than trailer converter dollies, designed to tow another vehicle equipped with air brakes, 0.55 seconds in the case of trailer converter dollies, and 0.60 seconds in the case of trailers other than trailers designed to tow another vehicle equipped with air brakes shall meet the above actuation time requirement with a 50-cubic-inch test reservoir connected to the control line output coupling. A trailer, including a trailer converter dolly, shall meet the above actuation time

requirement with its control line input coupling connected to the test rig shown in Figure 1.



SV - Shut-off valve
R — Regulator (set at 100 psi for actuation tests and 95 psi for release test)
CV — Check Valve
MV — Metering Valve (Variable or Fixed)
QRV— Quick Release Valve

Figure 1.—Trailer Test Rig

(b) For a vehicle that is manufactured after May 3, 1991 and is designed to tow another vehicle equipped with air brakes, the pressure in the 50-cubic-inch test reservoir referred to in S5.3.3.1(a) shall, when measured from the first movement of the service brake control, reach 60 p.s.i. not later than the time the fastest brake chamber on the vehicle reaches 60 p.s.i. or, at the option of the manufacturer, in not more than 0.35 seconds in the case of trucks and buses, 0.55 seconds in the case of trailer converter dollies, and 0.50 seconds in the case of trailers other than trailer converter dollies.

[S5.3.3.2 Optional requirement for vehicles manufactured before May 3, 1991. With and initial service reservoir system air pressure of 100 psi, the air pressure in each brake chamber shall, when measured from the first movement of the service brake control, reach 60 p.s.i. in not more than 0.45 seconds in the case of trucks and buses, and 0.60 seconds in the case of trailers. A vehicle designed to tow another vehicle equipped with air brakes shall meet the above actuation time requirement with a 50-cubic-inch test reservoir connected to the control line output coupling. A trailer, including a trailer converter dolly, shall meet the above actuation time requirement with its control line input coupling connected to the test rig shown in Figure 1.

[S5.3.3.3 Optional requirement for vehicles manufactured before May 3, 1991. With an initial service reservoir system air pressure of 100 psi, the air pressure in each brake chamber shall, when measured from the first movement of the service brake control, reach 60 p.s.i. in not more than 0.45 seconds in the case of trucks and buses, 0.35 seconds in the case of trailer converter dollies, and 0.30 seconds in the case of trailers other than trailer converter dollies. A vehicle designed to tow another vehicle equipped with air brakes shall meet the above actuation time requirement with a 50-cubic-inch test reservoir connected to the control line output coupling. A trailer, including a trailer converter dolly, shall meet the above actuation time requirement with its control line input coupling connected to the test rig shown in Figure 1(a). **(54 F.R. 18890—May 3, 1989. Effective: June 2, 1989)]**

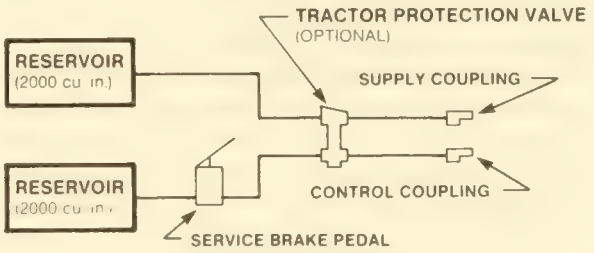


Figure 1a.—Trailer Test Rig

S5.3.4 Brake release time. **[**Each service brake system shall meet the requirements of S5.3.4.1, except that, at the option of the manufacturer, vehicles manufactured before May 3, 1991 may meet the requirements specified in either S5.3.4.2 or S5.3.4.3.

[S5.3.4.1 (a) With an initial service brake chamber air pressure of 95 p.s.i., the air pressure in each brake chamber shall, when measured from the first movement of the service brake control, fall to 5 p.s.i. in not more than 0.55 seconds in the case of trucks and buses, and fall to 5 p.s.i. in not more than 0.55 seconds in the case of trucks and buses, 1.00 seconds in the case of trailers, other than trailer converter dollies, designed to tow another vehicle equipped with air brakes, 1.10 seconds in the case of the trailer converter dollies, and 1.20 seconds in the case of trailers other the trailers designed to tow another vehicle equipped with air brakes. A vehicle designed to tow another vehicle equipped with air brakes shall be capable of meeting the above release time requirement with a 50-cubic-inch test reservoir connected to the control line coupling. A trailer, including a thailer con-

verter dolly, shall meet the above release time requirements with its brake system connected to the test rig shown in Figure 1.

(b) For vehicles designed to tow another vehicle equipped with air brakes, effective May 3, 1991, the pressure in the 50-cubic-inch test reservoir referred to in S5.3.4.1(a) shall, when measured from the first movement of the service brake control, fall to 5 p.s.i. in not more than 0.75 seconds in the case of trucks and buses, 1.10 seconds in the case of trailer converter dollies, and 1.00 seconds in the case of trailers other than trailer converter dollies.

[S5.3.4.2 Optional requirement for vehicles manufactured before May 3, 1991. With an initial service brake chamber air pressure of 95 p.s.i., the air pressure in each brake chamber shall, when measured from the first movement of the service brake control, fall to 5 p.s.i. in not more than 0.55 seconds in the case of trucks and buses, and 1.20 seconds in the case of trailers. A vehicle designed to tow another vehicle equipped with air brakes shall meet the above release time requirement with a 50-cubic-inch test reservoir connected to the control line output coupling. A trailer, including a trailer converter dolly, shall meet the above release time requirement with its control line input coupling connected to the test rig shown in Figure 1.

[S5.3.4.3 Optional requirement for vehicles manufactured before May 3, 1991. With an initial service brake chamber air pressure of 95 p.s.i., the air pressure in each brake chamber shall, when measured from the first movement of the service brake control, fall to 5 p.s.i. in not more than 0.55 seconds in the case of trucks and buses, and 0.65 seconds in the case of trailers. A vehicle designed to tow another vehicle equipped with air brakes shall meet the above release time requirement with a 50-cubic-inch test reservoir connected to the control line output coupling. A trailer, including a trailer converter dolly, shall meet the above release time requirement with its control line input coupling connected to the test rig show in Figure 1(a). **54 F.R. 18890—May 3, 1989. Effective: June 2, 1989.)]**

S5.4 Service brake system—dynamometer tests. When tested without prior road testing, under the conditions of S6.2, each brake assembly shall meet the requirements of S5.4.1, S5.4.2, and S5.4.3 when tested in sequence and without adjustments other than those specified in the standard. For purposes of the requirements of S5.4.2 and S5.4.3, an average deceleration rate is the change in velocity divided by the deceleration time measured from the onset of deceleration. However, a brake assembly on a heavy hauler trailer manufactured before July 1, 1979, need not meet the requirements of this section.

S5.4.1 Brake retardation force. The sum of the retardation forces exerted by the brakes on each vehicle designed to be towed by another vehicle equipped with air brakes shall be such that the quotient

$$\frac{\text{sum of the brake retardation forces}}{\text{sum of GAWRs}}$$

relative to brake chamber air pressure shall have values not less than those shown in Column 1 of Table III. Retardation force shall be determined as follows:

Table III.—Brake Retardation Force

BRAKE RETARDATION FORCE GAWR	BRAKE CHAMBER PRESSURE, p.s.i.
Column 1	Column 2
0.05	20
0.12	30
0.18	40
0.25	50
0.31	60
0.37	70
0.41	80

S5.4.1.1 After burnishing the brake pursuant to S6.2.6, retain the brake assembly on the inertia dynamometer. With an initial brake temperature between 125°F and 200°F, conduct a stop from 50 mph, maintaining brake chamber air pressure at a constant 20 psi. Measure the average torque exerted by the brake from the time the specified air pressure is reached until the brake stops and divide by the static loaded tire radius specified by the tire manufacturer to determine the retardation force.

Repeat the procedure six times, increasing the brake chamber air pressure by 10. After each stop, rotate the brake drum or disc until the temperature of the brake falls to between 125°F. and 200°F.

S5.4.2 Brake power. When mounted on an inertia dynamometer, each brake shall be capable of making 10 consecutive decelerations at an average rate of 9 fpsps from 50 mph to 15 mph, at equal intervals of 72 seconds, and shall be capable of declerating to a stop from 20 mph at an average deceleration rate of 14 fpsps one minute after the 10th acceleration. The series of decelerations shall be conducted as follows:

S5.4.2.1 With an initial brake temperature between 150°F and 200°F for the first brake application, and the drum or disc rotating at a speed equivalent to 50 mph, apply the brake and decelerate at an average deceleration rate of 9 fpsps to 15 mph. Upon reaching 15 mph, accelerate to 50 mph and apply the brake for a second time 72 seconds after the start of the first application. Repeat the cycle until 10 decelerations have been made. The service line air pressure shall not exceed 100 psi during any deceleration.

S5.4.2.2 One minute after the end of the last deceleration required by S5.4.2.1 and with the drum or disc rotating at a speed of 20 mph, decelerate to a stop at an average deceleration rate of 14 fpsps.

S5.4.3 Brake recovery. Starting 2 minutes after completing the tests required by S5.4.2, the brake of a vehicle other than either front axle brake of a truck-tractor shall be capable of making 20 consecutive stops from 30 mph at an average deceleration rate of 12 ft/s/s, at equal intervals of 1 minute measured from the start of each brake application. The service line air pressure needed to attain a rate of 12 ft/s/s shall be not more than 85 lb./in.^{2}, and not less than 20 lb./in.^{2} for a brake not subject to the control of an antilock system, or 12 lb./in.^{2} for a brake subject to the control of an antilock system.

S5.5 Antilock system.

S5.5.1 Antilock system failure. On a vehicle equipped with an antilock system, electrical failure of any part of the antilock system shall not increase the actuation and release times of the service brakes.

S5.5.2 Antilock system power—trailers. On a trailer equipped with an antilock system that requires electrical power for operation, the power shall be obtained from the stop lamp circuit. Additional circuits may also be used to obtain redundant sources of electrical power.

S5.6 Parking brake system. Each vehicle other than a trailer converter dolly shall have a parking brake system that under the conditions of S6.1 meets the requirements of S5.6.1 or S5.6.2, at the manufacturer's option, and the requirements of S5.6.3 and S5.6.4. However, the trailer portion of an auto transporter manufactured before January 1, 1980 and any agricultural commodity trailer, heavy hauler trailer, or pulpwood trailer, shall meet the requirements of this section, or, at the option of the manufacturer, the requirements of § 393.43 of the title.

S5.6.1 Static retardation force. With all other brakes rendered inoperative, during a static drawbar pull in a forward or rearward direction, the static retardation force produced by the application of the parking brakes shall be:

(a) In the case of a vehicle other than a truck-tractor that is equipped with more than two axles, such that the quotient

$$\frac{\text{static retardation force}}{\text{GAWR}}$$

is not less than 0.28 for any axle other than a steerable front axle; and

(b) In the case of a truck-tractor that is equipped with more than two axles, such that the quotient

$$\frac{\text{static retardation force}}{\text{GVWR}}$$

is not less than 0.14.

S5.6.2 Grade holding. With all parking brakes applied, the vehicle shall remain stationary facing uphill and facing downhill on a smooth, dry portland cement concrete roadway with a 20%

grade, both (a) when loaded to its gross vehicle weight rating, and (b) at its unloaded vehicle weight plus 500 pounds (including driver and instrumentation).

S5.6.3 Application and holding. Each parking brake system shall meet the requirements of S5.6.3.1 through S5.6.3.4, except that, at the option of the manufacturer, vehicles manufactured before September 7, [1990], may meet the requirements specified in S5.6.3.5.

S5.6.3.1 The parking brake system shall be capable of achieving the minimum performance specified either in S5.6.1 or S5.6.2 with any single leakage-type failure, in any other brake system, of a part designed to contain compressed air or brake fluid (except failure of a component of a brake chamber housing).

S5.6.3.2 For trucks and buses, with an initial reservoir system pressure of 100 psi and, if designed to tow a vehicle equipped with air brakes, with a 50 cubic inch test reservoir connected to the supply line coupling, at all times after three seconds from the time of actuation of the parking brake control, the parking brake system shall achieve the minimum parking retardation performance specified in S5.6.3.1. For trailers, with an initial supply line pressure of 100 psi and, if designed to tow a vehicle equipped with air brakes, with a 50 cubic inch test reservoir connected to the supply line coupling, at all times after three seconds from the time venting to the atmosphere of the front supply line connection is initiated, the parking brake system shall achieve the minimum retardation performance specified in S5.6.3.1.

S5.6.3.3 A mechanical means shall be provided which is capable, with zero air pressure and zero fluid pressure in the vehicle and without electrical power, of holding the parking brake application at a level meeting the minimum parking retardation performance specified in S5.6.3.1.

S5.6.3.4 For trucks and buses, with an initial reservoir system pressure of 100 psi and, if designed to tow a vehicle equipped with air brakes, with a 50 cubic inch test reservoir connected to the supply line coupling, no later than three seconds from the time of operation of the parking brake control, the mechanical means referred to in S5.6.3.3 shall be actuated. For trailers, with an initial supply line pressure of 100 psi and, if designed to tow a vehicle equipped with air brakes, with a 50 cubic inch test reservoir connected to the supply line coupling, no later than three seconds from the time venting to the atmosphere of the front supply line connection is initiated, the mechanical means referred to in S5.6.3.3 shall be actuated.

S5.6.3.5. Optional requirement for vehicles manufactured before September 7, [1990]. The parking brake system shall be capable of achieving the minimum performance specified either in S5.6.1 or S5.6.2. with any single leakage-type failure, in any other brake system, of a part designed to contain compressed air or brake fluid (except failure of a component of a brake chamber housing). Once applied, the parking brakes shall be held in the applied position solely by mechanical means.

S5.6.4 Parking brake control—trucks and buses. The parking brake control shall be separate from the service brake control. It shall be operable by a person seated in the normal driving position. The control shall be identified in a manner that specifies the method of control operation. The parking brake control shall control the parking brakes of the vehicle and of any air braked vehicle that it is designed to tow.

S5.7 Emergency brake system—trucks and buses. Each vehicle shall be equipped with an emergency brake system which, under the conditions of S6.1, conforms to the requirements of S5.7.1through S5.7.3. However, the truck portion of an auto transporter need not meet the road test requirements of S5.7.1 and S5.7.3.

S5.7.1 Emergency brake system performance. When stopped six times for each combination of weight and speed specified in S5.3.1.1 on a road surface with a skid number of 81, with a single failure in the service brake system of a part designed to contain compressed air or brake fluid (except failure of a common valve, manifold brake

fluid housing, or brake chamber housing), the vehicle shall stop at least once in not more than the distance specified in Column 3 of Table II, measured from the point at which movement of the service brake control begins, without any part of the vehicle leaving the roadway, except that a truck-tractor tested at its unloaded vehicle weight plus 500 pounds shall stop at least once in not more than the distance specified in Column 4 of Table II.

S5.7.2 Emergency brake system operation. The emergency brake system shall be applied and released, and be capable of modulation, by means of the service brake control.

S5.7.3 Towing vehicle emergency brake requirements. In addition to meeting the other requirements of S5.7, a vehicle designed to tow another vehicle equipped with air brakes shall—

(a) In the case of a truck-tractor in the unloaded condition and a single unit truck which is capable of towing an air-brake equipped vehicle and is loaded to gross vehicle weight rating, be capable of meeting the requirements of S5.7.1 by operation of the service brake control only, with the trailer air supply line and air control line from the towing vehicle vented to the atmosphere in accordance with S6.1.14;

(b) In the case of a truck-tractor loaded to gross vehicle weight rating, be capable of meeting S5.7.1 by operation of the service brake control only, with the air control line from the towing vehicle vented to the atmosphere in accordance with S6.1.14; and

(c) Be capable of modulating the air in the supply or control line to the trailer by means of the service brake control with a single failure in the towing vehicle service brake system as specified in S5.7.1.

S5.8 Emergency braking capability—trailers. Each trailer other than a trailer converter dolly shall have a parking brake system that conforms to S5.6 and that applies with the force specified in S5.6.1 or S5.6.2 when the air pressure in the supply line is at atmospheric pressure. A trailer converter dolly shall have, at the manufacturer's option, (a) a parking brake system that conforms to S5.6 and that applies with the force specified in S5.6.1 or S5.6.2 when the air pressure in the supply line is at atmospheric pressure, or (b) an emergency system that automatically controls the service brakes when the service reservoir is at any pressure above 20 lb./in.^{2} and the supply line is at atmospheric pressure. However, the trailer portion of an auto transporter manufactured before January 1, 1980, and any agricultural commodity trailer, heavy hauler trailer, or pulpwood trailer shall meet the requirements of this section or, at the option of the manufacturer, the requirements of § 393.43 of this title.

S6. Conditions. [The requirements of S5 shall be met by a vehicle when it is tested according to the conditions set forth below, without replacing any brake system part or making any adjustments to the brake system except as specified. Unless otherwise specified, where a range of conditions is specified, the vehicle must be capable of meeting the requirements at all points within the range. On vehicles equipped with automatic brake adjusters, the automatic brake adjusters must remain activated at all times **(54 F.R. 40080—September 29, 1989. Effective: September 1, 1991)**]

S6.1 Road test condition.

S6.1.1 Except as otherwise specified, the vehicle is loaded to its gross vehicle weight rating, distributed proportionally to its gross axle weight ratings. During the burnish procedure specified in S6.1.8, truck tractors shall be loaded to their GVWR, by coupling them to an unbraked flatbed semitrailer, which semitrailer shall be loaded so that the weight of the tractor-trailer combination equals the GVMR of the truck tractor. The load on the unbraked flatbed semitrailer shall be located so that truck tractor's wheels do not lock during burnish.

S6.1.2 The inflation pressure is as specified by the vehicle manufacturer for the gross vehicle weight rating.

S6.1.3 Unless otherwise specified, the transmission selector control is in neutral or the clutch is disengaged during all decelerations and during static parking brake tests.

S6.1.4 All vehicle openings (doors, windows, hood, trunk, cargo doors, etc.) are in a closed position except as required for instrumentation purposes.

S6.1.5 The ambient temperature is between 32°F and 100°F.

S6.1.6 The wind velocity is zero.

S6.1.7 Unless otherwise specified, stopping tests are conducted on a 12-foot wide, level, straight roadway having a skid number of 81, inclusive, chosen at the option of the manufacturer. The vehicle is aligned in the center of the roadway at the beginning of the stop.

S6.1.8 The brakes are burnished before testing in accordance with S6.1.8.1. However, for vehicles with parking brake systems not utilizing the service brake friction elements, burnish the friction elements of such systems prior to the parking brake test according to the manufacturer's recommendations.

S6.1.8.1 [Vehicles manufactured before September 1, 1993 may be burnished according to the procedures set forth in S6.1.8.1(a) or S6.1.8.1(b) of this section, at the manufacturers option. Vehicles manufactured on or after September 1, 1993 shall be burnished according to the procedures set forth in S6.1.8.1(b) of this section.

(a) With the transmission in the highest gear appropriate for the series given in Table IV, make 500 brake applications at a deceleration rate of 10 fsps, or at the vehicle's maximum deceleration rate, if not less than 10 fsps, in the sequence specified. Except where an adjustment is specified, after each brake application accelerate to the next speed specified and maintain that speed until making the nixt brake application at a point 1 mile from the initial point of the previous brake application. If a vehicle cannot attain any speed specified in 1 mile, continue to accelerate until the specified speed is reached or until the vehicle has traveled 1.5 miles from the initial point of the previous brake application, whichever occurs first. If during any of the brake applications specified in Table IV the hottest brake reaches 550° F, make the remainder of the 500 brake applications from that snub condition, except that a higher or lower snub condition shall be used as necessary to maintain an after-stop temperature of 500° F ± 50° F. However, if at a snub condition of 40 to 20 mph, the temperature of the hottest brake exceeds 550° F, make the remainder of the 500 brake applications from that snub condition, without regard to brake temperature. The brakes shall be adjusted three times during the burnish procedure, after 125, 250, and 375 snubs and after completing this burnish, with each adjustment made in accordance with the manufacturer's recommendations. Any automatic pressure limiting valve is in use to limit pressure as designed, except that any automatic front axle pressure limiting valve is bypassed if the temperature of the hottest brake on a rear axle exceeds the temperature of the hottest brake on a front axle by more than 125° F. A bypassed valve is reconnected if the temperature of the hottest brake on a front axle exceeds the temperature of the hottest brake on a rear axle by 100° F or more.

Table IV

Series	Snubs	Snub conditions (highest speed indicated)
1	175	40 to 20 mph.
2	25	45 to 20 mph.
3	25	50 to 20 mph.
4	25	55 to 20 mph.
5	250	60 to 20 mph.

(b) With the transmission in the highest gear appropriate for a speed of 40 mph, make 500 snubs between 40 mph and 20 mph at a deceleration rate of 10 fsps, or at the vehicle's maximum decelaration rate if less than 10 fsps. Except where an adjustment is specified, after each brake application accelerate to 40 mph and maintain that speed until making the next brake application at a point 1 mile from the initial point of the previous brake application. If the vehicle cannot attain a speed of 40 mph in 1 mile, continued to acclerate until the vehicle reaches 40 mph or until the vehicle has traveled 1.5 miles from the initial point of the previous brake application, whichever occurs first. Any automatic pressure limiting valve is in use to limit pressure as designed. The brakes shall be adjusted three times during the burnish procedure, in accordance with the manufacturer's recommendations, after 125, 250, and 375 snubs, and shall be adjusted after burnish in accordance with the manufacturer's recommendations.] **(53 F.R. 8190—March 14, 1988. Effective: September 11, 1988).**

S6.1.9 Static parking brake tests for a semitrailer are conducted with the front end supported by an unbraked dolly. The weight of the dolly is included as part of the trailer load.

S6.1.10 In a test other than a static parking brake test, a truck-tractor is tested at its gross vehicle weight rating by coupling it to a flatbed semitrailer (hereafter, control trailer) as specified in S6.1.10.1 to S6.1.10.7.

S6.1.10.1 The control trailer conforms to this standard.

S6.1.10.2 The center of gravity of the loaded control trailer is on the trailer's longitudinal centerline at a height of 66±3 in. above the ground.

S6.1.10.3 For a truck-tractor with a rear axle gross axle weight rating of 26,000 lb or less, the control trailer has a single axle with a gross axle weight rating of 18,000 lb and a length, measured from the transverse centerline of the axle to the centerline of the kingpin, of 258±6 in.

S6.1.10.4 For a truck-tractor with a total rear axle gross axle weight rating of more than 26,000 lb the control trailer has a tandem axle with a combined gross axle weight rating of 32,000 lb and a length, measured from the transverse centerline between the axles to the centerline of the kingpin, of 390±6 in.

S6.1.10.5 The control trailer is loaded so that its axle is loaded to its gross axle weight rating and the tractor is loaded to its gross vehicle weight rating, with the tractor's fifth wheel adjusted so that the load on each axle measured at the tire-ground interface is most nearly proportional to the axles' respective gross axle weight ratings.

S6.1.10.6 Test equipment specification. The control trailer's service brakes are capable of stopping the combination from the maximum, speed at which the tractor is tested, under the conditions of S6.1, without assistance from the tractor brakes, in the distance found by multiplying the value 68, 90, 115, 143, 174, 208, or 245 (corresponding to a speed of 30, 35, 40, 45, 50, 55, or 60 mph as appropriate for the truck-tractor tested) by the ratio:

$$\frac{\text{weight on all axles of combination}}{\text{weight on trailer axles}}$$

with the tractor's fifth wheel adjusted as specified in S6.1.10.5, the trailer service reservoirs pressurized to 100 lb./in.^{2}, and the trailer loaded so that its axle is at gross axle weight rating and its kingpin is at empty vehicle weight. The stopping distance is measured from the point at which movement of the valve controlling the trailer brakes begins. The service brake chambers on the trailer reach 60 lb./in.^{2} in not less than 0.20 second and not more than 0.30 second, measured from the instant at which movement of the valve controlling the trailer brakes begins.

S6.1.10.7 Test equipment specification. The control trailer's emergency brakes are capable of stopping the combination under the conditions of S6.1 from the maximum speed at which the tractor is tested, without assistance from the tractor's brakes, in the distance found by multiplying the emergency brake stopping distance in column 3 of Table II by the ratio:

$$\frac{\text{weight on all axles of combination}}{\text{weight on trailer axles}}$$

with the combination loaded in accordance with S6.1.10.5. Stopping distance is measured from the point at which movement of the valve controlling the trailer brakes begins. In the case of control trailers that utilize parking brakes for emergency stopping capability, the pressure in the trailer's spring parking brake chambers falls from 95 lb./in.^{2} to 5 lb./in.^{2} in not less than 0.50 second and not more than 0.60 second, measured from the instant at which movement of the valve controlling the trailer's spring parking brakes begins.

S6.1.11 Special drive conditions. A vehicle equipped with an interlocking axle system of a front wheel drive system that is engaged and disengaged by the driver is tested with the system disengaged.

S6.1.12 Liftable axles. A vehicle with a liftable axle is tested at gross vehicle weight rating with the liftable axle down and at unloaded vehicle weight with the liftable axle up.

S6.1.13 [Trailer test rig. The trailer test rig shown in Figure 1 is calibrated in accordance with the calibration curves shown in Figure 3. For the

requirements of S5.3.3.1 and S5.3.4.1, the pressure in the trailer test rig reservoir is initially set at 100 p.s.i. for actuation tests and 95 p.s.i. for release tests.

(b) The trailer test rig shown in Figure 1(a) is capable of increasing the pressure in a 50 cubic inch reservoir from atmospheric to 60 lb/in² in 0.06 second, measured from the first movement of the service brake control to apply service brake pressure and of releasing pressure in such a reservoir from 95 to 5 lb/in² in 0.22 second measured from the first movement of the service brake control to release service brake pressure. **(54 F.R. 18890—May 3, 1989. Effective: June 2, 1989)]**

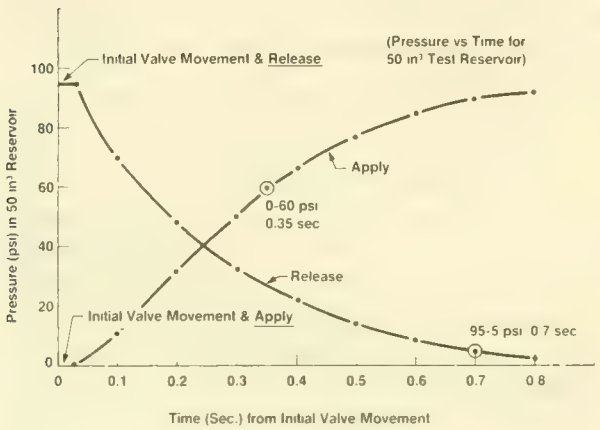


Figure 3.—Calibration Curves

S6.1.14 In testing the emergency braking system of towing vehicles under S5.7.3(a) and S5.7.3(b) the hose(s) is vented to the atmosphere at any time not less than 1 second and not more than 1 minute before the emergency stop begins, while the vehicle is moving at the speed from which the stop is to be made and any manual control for the towing vehicle protection system is in the position to supply air and brake control signals to the vehicle being towed. No brake application is made from the time the line(s) is vented until the emergency stop begins and no manual operation of the parking brake system or towing vehicle protection system occurs from the time the line(s) is vented until the stop is completed.

S6.2 Dynamometer test conditions.

S6.2.1 The dynamometer inertia for each wheel is equivalent to the load on the wheel with the axle loaded to its gross axle weight rating. For a vehicle having additional gross axle weight ratings specified for operation at reduced speeds, the GAWR used is that specified for a speed of 50 mph, or, at the option of the manufacturer, any speed greater than 50 mph.

S6.2.2 The ambient temperature is between 75°F and 100°F.

S6.2.3 Air at ambient temperature is directed uniformly and continuously over the brake drum or disc at a velocity of 2,200 feet per minute.

S6.2.4 The temperature of each brake is measured by a single plus type thermocouple installed in the center of the lining surface of the most heavily loaded shoe or pad as shown in Figure II. The thermocouple is outside any center groove.

S6.2.5 The rate of brake drum or disc rotation on a dynamometer corresponding to the rate of rotation on a vehicle at a given speed is calculated by assuming a tire radius equal to the static loaded radius specified by the tire manufacturer.

S6.2.6 Brakes are burnished before testing as follows: Place the brake assembly on an inertia dynamometer and adjust the brake as recommended by the brake manufacturer. Make 200 stops from 40 mph at a deceleration of 10 fpsps, with an initial brake temperature on each stop of not less than 315°F and not more than 385°F. Make 200 additional stops from 40 mph at a deceleration of 10 fpsps with an initial brake temperature on each stop of not less than 450°F and not more than 550°F. The brakes shall be adjusted three times during the burnish procedure, after 100, 200, and 300 stops, and at the conclusion of the burnishing, in accordance with the manufacturer's recommendations.

S6.2.7 The brake temperature is increased to a specified level by conducting one or more stops from 40 mph at a deceleration of 10 fpsps. The brake temperature is decreased to a specified level by rotating the drum or disc at a constant 30 mph.

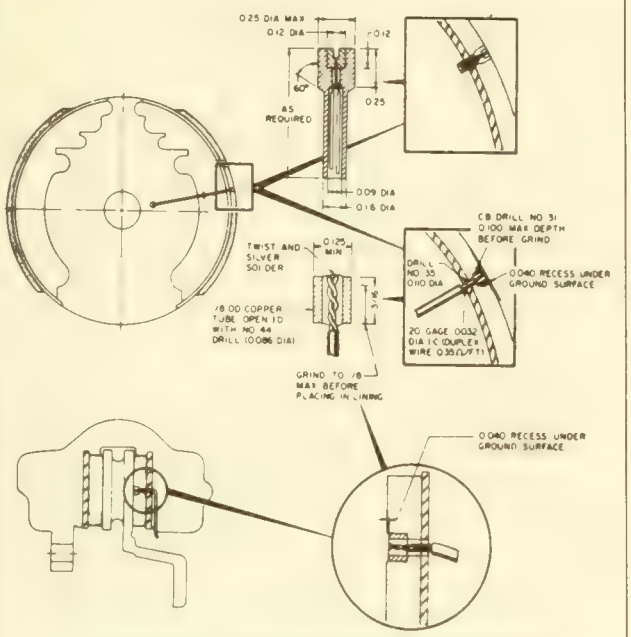


Figure 2.—Thermocouple Installation

36 F.R. 3817
February 27, 1971

PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 122

Motorcycle Brake Systems

This notice amends Part 571 of Title 49, Code of Federal Regulations, to add a new Motor Vehicle Safety Standard No. 122 (49 CFR § 571.-122) that establishes performance requirements for motorcycle brake systems. A notice of proposed rulemaking on this subject was published on March 24, 1971 (36 F.R. 5516).

The safety afforded by a motorcycle's braking system is determined by several factors, including stopping distance, linear stability while stopping, fade resistance, and fade recovery. A safe system should have features that both guard against malfunction and stop the vehicle should a malfunction occur in the normal service system. Standard No. 122 covers each of these aspects of brake safety, establishing equipment and performance requirements appropriate for two-wheeled and three-wheeled motorcycles. These requirements do not differ greatly from the proposals, and comments received in response to the notice have been considered in promulgating the rule.

I. *Equipment.* Each motorcycle is required to have either a split hydraulic service brake system or two independently actuated service brake systems. The latter system encompasses a hydraulic service brake system combined with a hand operated parking brake system. Although several objections were received to the split hydraulic service brake system proposal, the NHTSA has determined that partial failure braking features are necessary in the event of a hydraulic pressure loss in the normal service brake system. If a motorcycle has a hydraulic service brake system, it must also have a reservoir for each master cylinder, and a master cylinder reservoir label advising the proper grade of DOT brake fluid. If the service brake system is a split hydraulic type, a failure indicator lamp is required.

Additionally, three-wheeled motorcycles must be equipped with a friction type parking brake with a solely mechanical means to retain engagement. Some commenters felt that pin or pawl type brakes should be permitted. The Administration does not know of an impact test adequate to test the strength of a mechanical lock, and pin or pawl type brakes, prone to failure upon impact, have been found to be inadequate. The NHTSA concurs, however, with comments objecting to the proposed parking brake indicator lamp, and has determined that the safety benefits involved are negligible in comparison with the expense of providing it.

II. *Performance.* Conformity with performance requirements will be determined by subjecting motorcycles to a series of road tests. Vehicles must demonstrate the effectiveness of their service brake systems by stopping within specified distances from 30 mph, 60 mph, 80 mph, and from a speed divisible by 5 mph that is 4 mph to 8 mph less than the maximum vehicle speed.

Motorcycles will demonstrate fade resistance of their braking systems by making recovery stops subsequent to a series of fade stops from 60 mph. The hand lever force for the final recovery stop must be within plus 20 pounds and minus 10 pounds of the baseline check average force. This is a modification of the proposed "plus 10 pounds or 20 percent, whichever, is less, and minus 20 percent," based upon comments requesting the substitution of absolute values. The same modification is made in the final water recovery stop. The maximum speed fade and recovery proposal has not been adopted, as two and three-wheeled motor vehicles do not have the inherent cooling problems that braking systems on four-wheeled vehicles experience. Retention of the 60 mph stops will ensure that the system maintain adequate stopping ability despite

the high temperatures created by prolonged use, and may reveal undesirable brake lining characteristics such as glazing.

The test sequence has been rearranged so that the parking brake system test for three-wheeled motorcycles occurs immediately before the water recovery test. At this point in the test sequence the brakes will have been fully burnished, and the test will therefore be more indicative of service performance. Parking brake application forces have been modified from the proposal, and specify a maximum applied force of not more than 90 pounds for a foot-operated system and 55 pounds for a hand-operated system. These forces are identical to those specified in S6.10, the test condition on brake actuation forces, and result in a uniformity of brake actuation forces throughout the standard.

Finally, a motorcycle must demonstrate acceptable stopping performance after its brake system has been exposed to water. Comments expressed dissatisfaction with the proposed test procedure, stating that complete immersion of the brakes is not indicative of the manner in which they become wet in actual service. NHTSA agrees that poor braking performance often is not attributable to complete immersion, but rather to prolonged exposure to a constant spray from the road surface. However, there is no basis on which to specify a test procedure reflecting these conditions, and the immersion procedure has, therefore, been retained.

At the end of the test procedure the brake system must pass a durability inspection.

All stops must be made without lockup of any wheel. Two-wheeled motorcycles must remain within an 8-foot-wide lane during stops (modified from the proposed 6-foot-wide lane), and three-wheeled ones within a lane equal to vehicle width plus five feet. Some commenters asked that tests be performed with the clutch engaged. However, the effectiveness of a brake system in bringing a vehicle to a stop within required distances is more accurately judged by requiring that stops be made with the clutch disengaged; there is less reliance on extraneous factors such as use of engine retardation as a braking assist and the varying skills of individual drivers when shifting downward through gears.

Regarding test conditions, comments were received that it is unnecessary for both braking systems of a two-wheeled motorcycle to be within the specified pedal and lever force range simultaneously. The Administration did not concur with these comments. The safety of cyclists requires not only that motorcycles be capable of stopping within specified distances, but also that this capability be demonstrated when reasonable forces are applied to the brake lever and pedal.

Several commenters also objected to the "impossibility" of the test condition that "the wind velocity is zero." The comment reveals misunderstanding of the significance of the test conditions. A manufacturer may test for compliance by running the tests under any wind conditions that are adverse to the vehicle; obviously if the vehicle meets the requirements under adverse wind conditions, it will meet them under no-wind conditions. Similarly, the Government will prove noncompliance by orienting the test runs so that wind conditions are favorable to the vehicle. Thus, the condition uniquely allows testing under whatever wind conditions are present. It is retained as the most practicable and least burdensome test method for all parties.

Effective date: September 1, 1973. Because of the necessity to allow manufacturers sufficient production leadtime, it is found for good cause shown, that an effective date later than one year after issuance is in the public interest.

In consideration of the foregoing, Title 49, Code of Federal Regulations, is amended by adding § 571.122, Motor Vehicle Safety Standard No. 122, *Motorcycle Brake System.*

This notice is issued under the authority of section 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority from the Secretary of Transportation to the National Highway Traffic Safety Administrator, 49 CFR 1.51.

Issued on: March 1, 1972.

Charles H. Hartman
Acting Administrator

37 F.R. 5033
March 9, 1972

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 122

Motorcycle Brake Systems

(Docket No. 1–3; Notice No. 4)

This notice responds to petitions for reconsideration of Motor Vehicle Safety Standard No. 122 (49 CFR § 571.122), and changes the effective date of the standard to January 1, 1974.

Motor Vehicle Safety Standard No. 122 establishing requirements for motorcycle braking equipment, stopping distance, brake system fade and recovery, and wet brake recovery, effective September 1, 1973, was published on March 9, 1972 (37 F.R. 5033). Thereafter, pursuant to 49 CFR § 553.35, petitions for reconsideration of the rule were filed by Japan Automobile Manufacturers Association, Inc. ("JAMA"), and Cushman Motors ("Cushman") through counsel. In response to these petitions, the effective date of the standard is being changed. The Administrator has declined to grant requested relief from other requirements of the standard.

1. *Lining inspection requirement.* S5.1.5 of Standard No. 122 requires a brake system to be installed "so that the lining thickness of drum brake shoes may be visually inspected, either directly or by use of a mirror without removing the drums. . . ." JAMA has petitioned that the word "indirectly" be substituted for "by use of a mirror" in order to allow use of a device such as a wear indicator on the outside of front and rear brake panels. The NHTSA considers wear indicators to be a "direct" method of visual inspection since the extent of lining wear may be determined without removal of the drums. There is no need to amend the Standard to allow their use, and JAMA's petition is denied.

2. *Brake wetting procedure.* The procedure for wetting the brakes prior to testing for wet brake recovery (S7.10.2) specifies the complete immersion of brake assemblies.

JAMA has petitioned that a water trough be substituted, with water depth varying according to the cycle's tire rim size, through which the cycle would be driven for 2 minutes at a speed of 10 m.p.h. JAMA notes that this is similar to the procedure NHTSA proposed in Docket No. 70–27, *Hydraulic Brake Systems*, and commented that the same procedure should apply to all motor vehicles.

The NHTSA has determined that the inherent instability of two- and three-wheeled vehicles under wet road conditions justifies a different test procedure. The difference in configuration between motorcycles and four-wheeled vehicles is distinct enough that there is no assurance motorcycle brakes will be wet, or wet uniformly, by the trough method. It is recognized that neither method may represent the way brakes become wet under actual road conditions, but immersion of brake assemblies has been determined to be the more efficiently reproducible method of establishing a condition under which motorcycle brake system performance may be evaluated. The petition is denied.

3. *Stopping distance.* JAMA and Cushman petitioned for a relaxation of the stopping distance requirements of Table I. JAMA recommended that the stopping distance values in Column II (Preburnish effectiveness, partial mechanical system) and Column III (Effectiveness—total system) up to and including 70 m.p.h. be the stopping distances specified in SAE Recommended Practice J109a. This would mean an increase in range of 39–136 feet for the preburnish stopping distances, and 1–15 feet for total system effectiveness over the values of Standard No. 122. JAMA alleges that stopping distance is highly dependent upon the rider's

ability to control the brakes, and it requested the increased stopping distances to compensate for variations in the rider's skill.

Cushman, whose three-wheeled vehicles have a top speed of 38 m.p.h., requests that all stopping distances from 30 m.p.h. and 35 m.p.h. be modified, alleging that the only way it can meet the stopping distances is by redesigning its vehicle. Cushman also states that it is unaware of any incident where the stopping distances achieved by its present vehicle have become a factor in an accident, and that accordingly there is no need for the stopping distances set forth in Table I, as they apply to Cushman, in order to protect the public.

The NHTSA recognizes that its standards on braking (the forthcoming amendment to Standard No. 105, *Hydraulic Brake Systems*, Standard No. 121, *Air Brake Systems*, and Standard No. 122, *Motorcycle Brake Systems*) impose stringent requirements on the manufacturers of all types of vehicles, and that, in some instances, redesign may be necessary. But because of the ever increasing numbers of vehicles on urban and interstate roadways, and of passenger-miles traveled, the NHTSA considers improved braking systems to be the highest priority in its program of accident avoidance. Prompt and accurate braking response is deemed especially critical in providing a margin by which the vulnerable motorcyclist may escape death or serious injury. While the fatality rate for all motor vehicle occupants fell 3.8 per cent in 1970, it rose 18.9 per cent for motorcycle riders. Motorcycles account for less than 2.3 per cent of total vehicle registrations, but they are involved in 3.6 per cent of all fatal accidents. Therefore, the necessity that the industry achieve the full capability of the present state of the art has been found to outweigh the problems caused the individual manufacturers by compliance.

The NHTSA recognizes the effect of rider control upon stopping distance in the wording of S7. which deems stopping distance requirements met if only one of the specified number of stops occurs within the maximum allowable stopping distances. Comments to Docket No. 1–3 indicate that it is clearly reasonable and practicable to require motorcycles to meet the stopping distances adopted for Standard No. 122. The petitions of JAMA and Cushman are denied.

4. *Effective date.* JAMA has requested a 4 month delay in the effective date of Standard No. 122 because model changeover time for Japanese manufacturers extends through autumn to the end of the year. It estimates that only 50 per cent of the industry could be brought into compliance by September 1, 1973. In light of the design changes that may be necessitated, the Administrator finds this request reasonable and that for good cause shown a later effective date is in the public interest. The effective date of Standard No. 122 is hereby changed to January 1, 1974.

The notice is issued pursuant to the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority from the Secretary of Transportation to the National Highway Traffic Safety Administrator, 49 CFR 1.51.

Issued on June 9, 1972.

Douglas W. Toms
Administrator

37 F.R. 11973
June 16, 1972

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 122

Motorcycle Brake Systems

(Docket No. 1–3; Notice 6)

This notice amends Motor Vehicle Safety Standard No. 122, *Motorcycle Brake Systems*, 49 CFR 571.122, to modify the master cylinder labeling and the wetting procedure for the water recovery test, effective January 1, 1974.

The amendment is based upon a notice published December 15, 1972, (37 F.R. 26739). The NHTSA proposed a change in the wording of the master cylinder reservoir label which would be identical to that specified in Motor Vehicle Safety Standard No. 105a, *Hydraulic Brake Systems* (37 F.R. 17970). In addition, a change in the wetting procedure for the water recovery test was proposed to require sequential immersion of the front and rear brake assemblies in lieu of simultaneous immersion.

The comments received generally supported the proposal. Some minor changes were requested, and Standard No. 122 is being amended accordingly. The reservoir labeling requirements have been modified in format in a manner consistent with recent amendments to Standard No. 105a (38 F.R. 13017). The height of the lettering has been retained at 3/32 of an inch. In order to avoid any misinterpretation, it is the NHTSA's intent to have the label completed with DOT and the grade of fluid designed for use in the system and not a manufacturer's brand name and number. If, however, silicone-based or petroleum-based fluids are appropriate for the system design specific fluids may be designated until a DOT grade and performance requirements have been specified. A contrast in color will be required only of printed labels. For this purpose, it has been decided that raised or lowered letters will provide a sufficient degree of legibility.

Finally, based on a comment made by the Japan Automobile Manufacturers Association, Inc. (JAMA), the wetting procedure for the water recovery test has been changed to extend the maximum testing time from 5 minutes to 7 minutes. JAMA stated that immersion of the rear brake first would still create engine stall problems if the water were allowed to enter the engine through the muffler(s) during the front brake assembly immersion period. The NHTSA feels strongly that the front brake should be immersed last due to potential instabilies created by a "grabbing" front brake. The extra time which has been allotted should be sufficient for manufacturers to provide protection for the exhaust system, thereby alleviating the problem of engine stall, and providing a measure of relief for those who considered the 5-minute period as excessively short.

In consideration of the foregoing, 49 CFR § 571.122, Motor Vehicle Safety Standard No. 122, is amended. . . .

Effective date: January 1, 1974.

(Secs. 103, 112, 119 Pub. L. 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1407; delegation of authority at 38 F.R. 12147)

Issued on May 30, 1973.

James E. Wilson
Associate Administrator
Traffic Safety Programs

38 F.R. 14753
June 5, 1973

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 122

(Docket No. 74–16; Notice 2)

This notice amends 49 CFR 571.108, 571.122, and 571.123, Motor Vehicle Safety Standards Nos. 108, 122, and 123, to modify current requirements that apply to motor-driven cycles.

Interested persons have been afforded an opportunity to participate in the making of the amendment by a notice of proposed rulemaking published on April 12, 1974 (39 F.R. 13287) and due consideration has been given to all comments received in response to the notice, insofar as they relate to matters within its scope.

The prior notice responded to petitions by Cycles Peugeot, Ateliers de la Motobecane, and S.I.N.F.A.C., manufacturers, and Bermuda Bikes, Inc., and Robert F. Smith, retail dealers. The notice proposed that a motor-driven cycle whose speed attainable in 1 mile is 30 mph or less need not be equipped with turn signal lamps, and may be equipped with a stop lamp with one-half the photometric output otherwise required. Braking fade and recovery requirements also would not apply to these low-speed vehicles. Maximum stopping distance values for the various tests should be added for test speeds of 25, 20, and 15 mph. Finally, a braking control on the left handlebar would be a permissible alternative to the required right foot braking control.

The comments received addressed both areas of performance covered in the proposal, and areas where no standards currently exist, such as motors, transmissions, pedals, and a request for exemption from Standard No. 119, *Tires for Vehicles Other Than Passenger Cars*. As these latter comments cover matters beyond the scope of the proposal, this notice does not discuss them. The agency, however, has been formally petitioned for rulemaking covering transmissions and Standard No. 119, and will respond to the petitioners in the near future.

The decision by NHTSA not to establish a separate category of vehicle was objected to by some commenters. In support of their request, they argued that the majority of motor-driven cycles have engines producing only 1.5 to 2 horsepower, and consequent low maximum speeds, reducing the need for forward lighting that is currently required of these vehicles. Petitioners submitted no data justifying their request. The NHTSA, however, intends to study the matter of forward lighting for low-powered two-wheeled vehicles through a research contract with the University of Michigan. When the contract is completed the agency will then decide whether further rulemaking is warranted.

The proposal distinguished motor-driven cycles on the basis of maximum speed attainable in 1 mile, rather than on horsepower, and the value selected, 30 mph, fell within the maximum (40 mph) and minimum (20 mph) suggested by commenters. The NHTSA has concluded therefore that the distinction should be adopted as proposed.

Some manufacturers requested restrictive controls on power plant output, apparently in fear that the engine of a vehicle with a top speed of 30 mph or less could be modified to exceed that speed, and therefore cause the vehicle to no longer comply with the Federal standards. This agency has not found that course of action to be practicable. The various ways to modify a vehicle after purchase cannot be anticipated or prevented at the manufacturer level. On the other hand, the great majority of consumers use their vehicles in the form in which they were purchased. The motor-driven cycle category itself contains a limitation of 5 horsepower, which will be applicable to the special lighting modifications. In the NHTSA's judgment, modifications by consumers and the consequent equipment requirements should continue to be regulated at the State level.

The fact that the agency took no action to propose a reduction in existing headlamp requirements for motor-driven cycles was criticized by several manufacturers as unduly restrictive because of the low speed and power output of their vehicles. No justification has been shown for such a change. Motor-driven cycles therefore must have sufficient generating and/or battery capacity to meet the headlamp requirements.

There was no substantive objection to the actual proposals for omission of turn signals, reduced stop lamp photometrics, relief from brake fade requirements, inclusion of maximum allowable stopping distances for low speeds, and rear brake control placement. Accordingly, the standards are being amended in the manner proposed.

Standard No. 122 is also being amended to delete the final effectiveness test (S5.5) for those motor-driven cycles excused from the fade and recovery requirements. The purpose of the final effectiveness test is to check the stopping ability of the vehicle after the fade and recovery tests. Since this requirement has been eliminated for motor-driven cycles of low top-speed, the final effectiveness test is redundant, and an unnecessary duplication of the second effectiveness test. No safety purpose is served by its retention. Language is also added to the fade and recovery and final effectiveness test procedures (S7.6, S7.7, and S7.8), making it clear that they do not apply to motor-driven cycles whose speed attainable in 1 mile is 30 mph or less.

In consideration of the foregoing, 49 CFR Part 571 is amended . . . .

Effective date: October 14, 1974. As the amendments allow new options for compliance, relieve restrictions, and impose no additional burdens on regulated persons, it is found for good cause shown tha an effective date earlier than 180 days after issuance of the amendments is in the public interest.

(Sec. 103, 119, Pub. L. 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on September 6, 1974.

James B. Gregory
Administrator

39 F.R. 32914
September 12, 1974

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 122

Motorcycle Brake Systems

This notice corrects an error in paragraph S7.8.1 of 49 CFR 571.122, Motor Vehicle Safety Standard No. 122, *Motorcycle Brake Systems.*

On March 24, 1971 NHTSA proposed (36 FR 5516) as part of its anticipated motorcycle braking standard, that the final effectiveness test "repeat S7.6 including S7.3.1". Proposed S7.6 was the service brake system second effectiveness test. When Standard No. 122 was issued on March 9, 1972 (37 F.R. 5033) the proposal was adopted, in S7.8.1, that the final effectiveness test "Repeat S7.6 including S7.3.1". However, in the development of the final rule the test sequence was rearranged and the second effectiveness test had become S7.5. Through oversight, a corresponding change was not made in the final effectiveness test provisions. Accordingly the change is being made by this notice.

In consideration of the foregoing, paragraph S7.8.1 of 49 CFR § 571.122, Motor Vehicle Safety Standard No. 122 is revised to read "S7.8.1 *Service brake system.* Repeat S7.5 including S7.3.1".

Effective date: December 10, 1974. Because the notice corrects an error and creates no additional burden upon any person, it is found for good cause shown that an immediate effective date is in the public interest.

(Sec. 103, 119, Pub. L. 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51)

Issued on December 4, 1974.

James B. Gregory
Administrator

39 F.R. 43075
December 10, 1974

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 122

Motorcycle Brake Systems

(Docket No. 75–27; Notice 4)

This notice amends Standard No. 105–75, *Hydraulic Brake Systems*, and Standard No. 122, *Motorcycle Brake Systems*, to modify the means for establishing the frictional resistance of the surface on which stopping distance tests are conducted. A similar amendment is made to Part 575, *Consumer Information*, of Title 49 of the Code of Federal Regulations.

The National Highway Traffic Safety Administration (NHTSA) proposed the change in Standard No. 105–75 (49 CFR 571.105–75), Standard No. 121, *Air Brake Systems* (49 CFR 571.121), Standard No. 122 (49 CFR 571.122), and the Consumer Information Regulations (49 CFR 575.101) in response to a petition from British-Leyland Motors Limited (40 FR 45200, October 1, 1975). The existing test procedure in these regulations has specified use of the American Society for Testing and Materials (ASTM) E–274–65T procedure, using an ASTM E249 tire that is no longer manufactured.

Responses were received on the proposed ASTM change from White Motor Corporation (White), Mack Trucks, Inc. (Mack), Freightliner Corporation (Freightliner), Ford Motor Company (Ford), General Motors Corporation (GM), Chrysler Corporation (Chrysler), American Motors Corporation (AMC), and International Harvester (IH). The National Motor Vehicle Safety Advisory Council made no comment on the proposal.

Most commenters supported use of the new test procedure and tire, although they differed in recommendations for correlating the reading produced under the new procedure with that produced under the old procedure. Manufacturers are presently certifying compliance to brake standards on test surfaces with a satisfactory reading under the old procedure, and they should be able to continue testing and certifying compliance on the same surface without any increase in the severity of the tests. To accomplish this transition, the correlation in readings between the procedures has been determined, and the difference is reflected in a change of the dry surface value from "skid number" 75 to "skid number" 81.

Freightliner urged postponement of any action until it could be supported by "adequate and statistically reliable test data." AMC also recommended that the NHTSA do nothing "until the industry has had sufficient time to evaluate and verify the performance of the ASTM E501 test tire on all types of surfaces."

The change in procedure is prompted by the ASTM decision to utilize a new tire in ascertaining the frictional coefficient of test surfaces. As a result the old tire is no longer manufactured and only the new tire is available for skid number measurement. Manufacturers have conducted comparative tests with the new tire to determine the correlation between the readings given by the two tires. Neither Freightliner nor AMC submitted data showing that the agency's proposal to adjust the dry surface skid number upwards is unjustified. Only Mack submitted data and it supported the NHTSA and Federal Highway Administration test data that have been placed in the docket. General Motors considered the agency's proposed upward adjustment to be the maximum desirable based on its data. International Harvester, Chrysler, and Ford supported the change in dry surface skid number without qualification, and White suggested that a skid number of 85 be utilized. The agency finds that the AMC and Freightliner requests for further delay are unjustified.

Ford and Freightliner asked that the skid number for the lower coefficient (wet) surface also be adjusted. The agency's purpose in proposing the adjustment is limited to changes necessary to avoid a modification of the test surfaces or an increase in the severity of performance levels specified under the safety standards. The NHTSA earlier concluded that change of the wet surface specification was unnecessary, and no evidence has been supplied that would modify the earlier determination.

General Motors noted that an editorial change to the newer ASTM procedure does not appear in early publications of that procedure. To put all interested persons on notice of the editorial change, the NHTSA has included the change in its references to the ASTM E274–70 procedure.

Freightliner asserted that the newer procedure included modification of a formula that justified a larger upwards adjustment than that proposed by the agency. Actually, the modifications only corrected an error in the earlier formula which had no effect on the determination of frictional coefficient. Manufacturers either utilized a test trailer that obviated the need for calculations using the formula, or were aware of the error and corrected for it in their calculations. Thus the adjustment requested by Freightliner is not warranted.

In accordance with recently-enunciated Department of Transportation policy encouraging adequate analysis of the consequences of regulatory action (41 FR 16201, April 16, 1976), the agency herewith summarizes its evaluation of the economic and other consequences of this amendment on the public and private sectors, including possible loss of safety benefit. Because the new references to procedures and a test tire are expected to accord with existing practices, the amendment is judged not to have any significant impact on costs or benefits of the standards and consumer information item that are modified by the change.

Standard No. 121, *Air Brake Systems*, is presently subject to judicial review under § 105(a) of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. § 1394(a)). The U.S. Court of Appeals hearing the petition for review has indicated that it prefers to review the standard as it presently exists, without unnecessary amendment. To the degree possible, the agency is complying with that request and therefore, in the case of Standard No. 121, will delay the update of ASTM procedure until review is completed.

It is noted that this change in procedure for ascertaining the frictional resistance of the test surface does not invalidate data collected using the older procedure, and manufacturers can presumably certify on the basis of stopping distance tests conducted on surfaces measured by the old tire.

In consideration of the foregoing, amendments are made in Chapter V of Title 49, Code of Federal Regulations.

Effective date: June 14, 1976. Because the older test tire is no longer manufactured, and because the amendment of procedure and test tire is intended only to duplicate the existing procedure and tire, this amendment creates no additional requirements for any person, and an immediate effective date is found to be in the public interest.

(Sec. 103, 119, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.50.)

Issued on June 8, 1976.

James B. Gregory
Administrator

41 F.R. 24592
June 17, 1976

PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 122

(Docket No. 78–14; Notice 1)

Motorcycle Brake Systems

This notice amends Motor Vehicle Safety Standard No. 122 *Motorcycle Brake Systems*, to incorporate an interpretation, clarifying that the parking brake system test for a 3-wheeled motorcycle does not require that a vehicle be held on a 30 percent grade for 5 minutes if the limit of traction of its braked wheels is reached on a lower grade so that the vehicle begins to slide. This notice also amends the standard to clarify the conditions under which traction is determined. The action is occasioned by a recent interpretation of the agency provided in response to a petition for temporary exemption from Standard No. 122 by Daihatsu Motor Company whose B–20 vehicle's limit of traction was reached on a 20 percent grade (43 F.R. 36548). The amendment has no effect upon safety since it is a statement and clarification of an existing agency interpretation.

Effective date: As an interpretative rule, the amendment is effective upon publication in the Federal Register. October 10, 1978.

For further information contact:

Scott Shadle, Office of Rulemaking, National Highway Traffic Safety Administration, Washington, D.C. 20590 (202–426–2153).

Supplementary information: Paragraph S5.6 of 49 CFR 571.122, Motor Vehicle Safety Standard No. 122, requires in part that the parking brake system for a 3-wheeled motorcycle "be capable of holding the motorcycle, for 5 minutes in both forward and reverse directions, on a 30 percent grade. . . ." Recently the agency entertained a petition from Daihatsu Motor Company, Ltd. for a renewal of an exemption granted an electric motor-driven cycle in 1976 because of the inability of its braked wheels to hold it on a 30 percent grade in the reverse direction. The agency disposed of the petition by publishing an interpretation allowing Daihatsu to certify compliance with Standard No. 122, stating that the agency did not intended "to dictate design requirements such as center of gravity location and tire design mandating that the vehicle itself have a limit of traction sufficient to hold it on a grade that is 30 percent or greater when its wheels are braked." (43 F.R. 36548)

NHTSA has decided to incorporate this interpretation into Standard No. 122 by appropriate amendments to the parking brake system requirement (S5.6) and test procedures (S7.9). A similar limit-of-traction provision already exists with respect to the parking brake system requirements for hydraulically braked vehicles (paragraph S5.2.1 of 49 CFR 571.105).

This notice also amends Standard No. 122 to set forth the road surface on which traction is to be determined. As in the case of the parking brake test conditions in paragraph S6.9 of 49 CFR 571.105 and paragraph S5.6.2 of 59 CFR 571.121, Air Brake Systems, this notice specifies a surface of clean, dry, smooth portland cement concrete.

Because the amendment is an interpretative rule, under the Administrative Procedures Act it may be adopted without prior notice and public comment (5 U.S.C. 553(b)).

The principal authors of this amendment are Taylor Vinson of the Office of Chief Counsel and John Carson of the Office of Rulemaking.

In consideration of the foregoing, 49 CFR 571.122, Motor Vehicle Safety Standard No. 122 is amended. . . .

(Secs. 103, 119, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.50.)

Issued on October 3, 1978.

Joan Claybrook
Administrator

43 F.R. 46547–46548
October 10, 1978

MOTOR VEHICLE SAFETY STANDARD NO. 122

Motorcycle Brake Systems

S1. Scope. This standard specifies performance requirements for motorcycle brake systems.

S2. Purpose. The purpose of the standard is to insure safe motorcycle braking performance under normal and emergency conditions.

S3. Application. This standard applies to motorcycles.

S4. Definitions.

"Braking interval" means the distance measured from the start of one brake application to the start of the next brake application.

"Initial brake temperature" means the temperature of the hottest service brake of the vehicle 0.2 miles before any brake application.

"Skid number" means the frictional resistance of a pavement measured in accordance with American Society for Testing and Materials (ASTM) Method E-274-70 (as revised July 1974) at 40 mph, omitting water delivery as specified in paragraphs 7.1 and 7.2 of that method.

"Stopping distance" means the distance traveled by a vehicle from the start of the brake application to the point where the vehicle stops.

"Split service brake system" means a brake system consisting of two or more subsystems actuated by a single control designed so that a leakage-type failure of a pressure component in a single subsystem (except structural failure of a housing that is common to all subsystems) shall not impair the operation of the other subsystem(s).

S5 Requirements. Each motorcycle shall meet the following requirements under the conditions specified in S6, when tested according to the procedures and in the sequence specified in S7. Corresponding test procedures of S7 are indicated in parentheses. If a motorcycle is in-

TABLE I

STOPPING DISTANCES FOR EFFECTIVENESS, FADE AND PARTIAL SYSTEM TESTS

Vehicle test speed m.p.h.	Stopping distance, feet			
	Effectiveness tests			
	Preburnish effectiveness total system (S5.2.1)	Preburnish effectiveness partial mechanical systems (S5.2.2)	Effectiveness total system (S5.4) (S5.7.1)	Effectiveness partial hydraulic systems (S5.7.2)
	I	II	III	IV
15	13	30	11	25
20	24	54	19	44
25	37	84	30	68
30	54	121	43	97
35	74	165	58	132
40	96	216	75	173
45	121	273	95	218
50	150	337	128	264
55	181	407	155	326
60	216	484	185	388
65	----------	----------	217	415
70	----------	----------	264	527
75	----------	----------	303	606
80	----------	----------	345	689
85	----------	----------	389	788
90	----------	----------	484	872
95	----------	----------	540	971
100	----------	----------	598	1076
105	----------	----------	659	1188
110	----------	----------	723	1302
115	----------	----------	791	1423
120	----------	----------	861	1549

TABLE II

BRAKE TEST SEQUENCE AND REQUIREMENTS

SEQUENCE L.C.	Test procedure	Requirements
1. Instrumentation check	S7.2	
2. First (Preburnish) effectivess test:		
(a) Service brake system	S7.3.1	S5.2.1
(b) Partal service brake system	S7.3.2	S5.2.2
3. Burnish procedure	S7.4	
4. Second effectiveness test	S7.5	S5.3
5. First fade and recovery test	S7.6	S5.4
6. Reburnish	S7.7	
7. Final effectiveness test:		
(a) Service brake system	S7.8.1	S5.5.1
(b) Partial service brake system	S7.8.2	S5.5.2
8. Parking brake test (three-wheeled motorcycles only)	S7.9	S5.6
9. Water recovery test	S7.10	S5.8
10. Design durability	S7.11	S5.8

capable of attaining a specified speed, its service brakes shall be capable of stopping the vehicle from the multiple of 5 mph that is 4 mph to 8 mph less than the speed attainable in 1 mile, within stoppping distances that do not exceed the stopping distances specified in Table 1.

S5.1 Required equipment—split service brake system. Each motorcycle shall have either a split service brake system or two independently actuated service brake systems.

S5.1.1 Mechanical service brake system. Failure of any component in a mechanical service brake system shall not result in a loss of braking ability in the other service brake system on the vehicle.

S5.1.2 Hydraulic service brake system. A leakage failure in a hydraulic service brake system shall not result in a loss of braking ability in the other service brake system on the vehicle. Each motorcycle equipped with a hydraulic brake system shall have the equipment specified in S5.1.2.1 and S5.1.2.2.

S5.1.2.1 Master cylinder reservoirs. Each master cylinder shall have a separate reservoir for each brake circuit, with each reservoir filler opening having its own cover, seal, and cover retention device. Each reservoir shall have a minimum capacity equivalent to one and one-half times the total fluid displacement resulting when all the wheel cylinders or caliper pistons serviced by the reservoir move from a new lining, fully retracted position to a fully worn, fully applied position. Where adjustment is a factor, the worst condition of adjustment shall be used for this measurement.

S5.1.2.2 [Reservoir labeling. Each motorcycle shall have a brake fluid warning statement that reads as follows, in letters at least 3/32 of an inch high:

"**WARNING:** Clean filler cap before removing. Use only _____ fluid from a sealed container." (Inserting the recommended type of brake fluid as specified in 49 CFR § 571.116, e.g. DOT 3)

The lettering shall be—

(a) Permanently affixed, engraved or embossed;

(b) Located so as to be visible by direct view, either on or within 4 inches of the brake fluid reservoir filler plus or cap; and

(c) Of a color that contrasts with its background, if it is not engraved or embossed.

S5.1.3. Split service brake system. In addition to the equipment required by S5.1.2 each motorcycle equipped with a split service brake system shall have a failure indicator lamp as specified in S5.1.3.1.

S5.1.3.1 Failure indicator lamp.

(a) One or more electrically operated service brake system failure indicator lamps that is mounted in front of and in clear view of the driver, and that is activated—

(1) In the event of pressure failure in any part of the service brake system, other than a structural failure of either a brake master cylinder body in a split integral body type master cylinder system or a service brake system failure indicator body, before or upon application of not more than 20 pounds of pedal force upon the service brake.

(2) Without the application of pedal force, when the level of brake fluid in a master cylinder reservoir drops to less than the recommended safe level specified by the manufacturer or to less than one-half the fluid reservoir capacity, whichever is the greater.

(b) All failure indicator lamps shall be activated when the ignition switch is turned from the "off" to the "on" or to the "start" position.

(c) Except for the momentary activation required by S5.1.3.1(b), each indicator lamp, once activated, shall remain activated as long as the condition exists, whenever the ignition switch is in the "on" position. An indicator lamp activated when the ignition is turned to the "start" position shall be deactivated upon return of the switch to the "on" position unless a failure exists in the service brake system.

(d) Each indicator lamp shall have a red lens with the legend "Brake Failure" on or adjacent to it in letters not less than $\frac{5}{32}$ of an inch high that shall be legible to the driver in daylight when lighted.

S5.1.4 Parking Brake. Each three-wheeled motorcycle shall be equipped with a parking brake of a friction type with a solely mechanical means to retain engagement.

S5.1.5 Other requirements. The brake system shall be installed so that the lining thickness of drum brake shoes may be visually inspected, either directly or by use of a mirror without removing the drums, and so that disc brake friction lining thickness may be visually inspected without removing the pads.

S5.2 Service Brake System. First (preburnish) effectiveness.

S.5.2.1 Service brake system. The service brakes shall be capable of stopping the motorcycle from 30 mph and 60 mph within stopping distances which do not exceed the stopping distances specified in Column I of Table I (S7.3.1).

S5.2.2 Partial service brake system. Each independently actuated service brake system on each motorcycle shall be capable of stopping the motorcycle from 30 mph and 60 mph within stoping distances which do not exceed the stopping distances specified in Column II of Table I (S7.3.2).

S.5.3 Service brake system—second effectiveness. The service brakes shall be capable of stopping the motorcycle from 30 mph, 60 mph, 80 mph, and the multiple of 5 mph that is 4 mph to 8 mph less than the speed attainable in 1 mile if this speed is 95 mph or greater, within stopping distances that do not exceed the stopping distances specified in Column III of Table I (S7.5).

S5.4 Service brake system—fade and recovery. These requirements do not apply to a motor-driven cycle whose speed attainable in 1 mile is 30 mph or less.

S.5.4.1 Baseline check—minimum and maximum pedal forces. The pedal and lever forces used in establishing the fade baseline check average shall be within the limits specified in S6.10 (S7.6.1).

S5.4.2 Fade. Each motorcycle shall be capable of making 10 fade stops from 60 mph at not less than 15 fpsps for each stop (S7.6.2).

S5.4.3 Fade recovery. Each motorcycle shall be capable of making five recovery stops with a pedal force that does not exceed 90 pounds, and a hand lever force that does not exceed 55 pounds for any of the first four recovery stops and that for the fifth recovery stop is within plus 20 pounds and minus 10 pounds of the fade test baseline check average force (S7.6.3).

S5.5 Service brake system—final effectiveness. These requirements do not apply to a motor-driven cycle whose speed attainable in 1 mile is 30 mph or less.

S5.5.1 Service brake system. The service brakes shall be capable of stopping the motorcycle in a manner that complies with S5.3 (S7.8.1).

S5.5.2 Hydraulic service brake system—partial failure. In the event of a pressure component leakage failure, other than a structural failure of either a brake master cylinder body in a split integral body type master cylinder system or a service brake system failure indicator body, the remaining portion of the service brake system shall continue to operate and shall be capable of stopping the motorcycle from 30 mph and 60 mph within stopping distances that do not exceed the stopping distances specified in Column IV of Table I (S7.8.2).

S5.6 Parking brake system. The parking brake system shall be capable of holding the motorcycle stationary (to the limits of traction of the braked wheels), for 5 minutes, in both forward and reverse directions, on a 30 percent grade, with an applied force of not more than 90 pounds for a foot-operated system and 55 pounds for a hand-operated system (S7.9).

S5.7 Service brake system—water recovery.

S5.7.1 Baseline check. The pedal and lever forces used in establishing the water recovery baseline check average shall be within the limits specified in S6.10 (S7.10.1).

S5.7.2 Water recovery test. Each motorcycle shall be capable of making five recovery stops with a pedal force that does not exceed 90 pounds, and a hand lever force that does not exceed 55 pounds, for any of the first four recovery stops, and that for the fifth recovery stop is within plus 20 pounds and minus 10 pounds of the baseline check average force (S7.10.2).

S5.8 Service brake system design durability. Each motorcycle shall be capable of completing all braking requirements of S5 without detachment of brake linings from the shoes or pad, detachment or fracture of any brake system components, or leakage of fluid or lubricant at the wheel cyclinder and master cylinder reservoir cover, seal, or retention device (S7.11).

S6. Test conditions. The requirements of S5 shall be met under the following conditions. Where a range of conditions is specified, the motorcycle shall be capable of meeting the requirements at all points within the range.

S6.1 Vehicle weight. Motorcycle weight is unloaded vehicle weight plus 200 pounds (including driver and instrumentation), with the added weight distributed in the saddle or carrier if so equipped.

S6.2 Tire inflation pressure. Tire inflation pressure is the pressure recommended by the manufacturer for the vehicle weight specified in paragraph S6.1.

S6.3 Transmission. Unless otherwise specified, all stops are made with the clutch disengaged.

S6.4 Engine. Engine idle speed and ignition timing settings are according to the manufacturer's recommendations. If the vehicle is equipped with an adjustable engine speed governor, it is adjusted according to the manufacturer's recommendation.

S6.5 Ambient temperature. The ambient temperature is between 32° and 100° F.

S6.6 Wind velocity. The wind velocity is zero.

S6.7 Road surface. Road tests are conducted on level roadway having a skid number of 81. The roadway is 8 feet wide for two-wheeled motorcycles, and overall vehicle width plus 5 feet for three-wheeled motorcycles. The parking brake test surface is clean, dry, smooth portland cement concrete.

S6.8 Vehicle position. The motorcycle is aligned in the center of the roadway at the start of each brake application. Stops are made without any part of the motorcycle leaving the roadway and without lockup of any wheel.

S6.7 Thermocouples. The brake temperature is measured by plug-type thermocouples installed in the approximate center of the facing length and width of the most heavily loaded shoe or disc pad, one per brake, as shown in Figure 1.

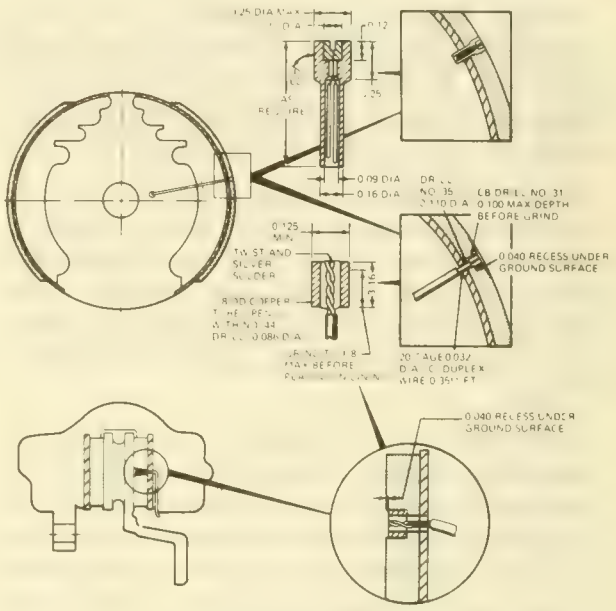
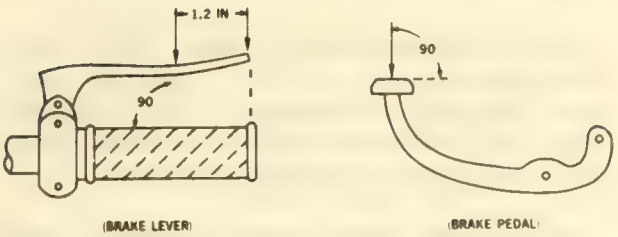


FIGURE 1

TYPICAL PLUG TYPE THERMOCOUPLE INSTALLATIONS

S6.10 Brake actuation forces. Except for the requirements of the fifth recovery stop in S5.4.3 and S5.7.2 (S7.6.3 and S7.10.2) the hand lever force is not less than five and not more than 55 pounds and the foot pedal force is not less than 10 and not more than 90 pounds. The point of initial application of the lever forces is 1.2 inches from the end of the brake lever grip. The direction of the force is perpendicular to the handle grip on the plane along which the brake lever rotates, and the point of application of the pedal force is the center of the foot contact pad of the brake pedal. The direction of the force is perpendicular to the foot contact pad on the plane along which the brake pedal rotates, as shown in Figure 2.

FIG. 2 DIRECTION OF FORCE



S7. Test procedures and sequence. Each motorcycle shall be capable of meeting all the requirements of this standard when tested according to the procedures and in the sequence set forth below without replacing any brake system part, or making any adjustments to the brake system other than as permitted in S7.4. A motorcycle shall be deemed to comply with S5.2, S5.3 and S5.5 if at least one of the stops specified in S7.3, S7.5 and S7.8 is made within the stopping distances specified in Table I.

S7.1 Braking warming. If the initial brake temperature for the first stop in a test procedure (other than S7.10) has not been reached, heat the brakes to the initial brake temperature by making up to 10 stops from 30 mph at a deceleration of not more than 10 fpsps. On independently operated brake systems, the coldest brake shall be within 10° F of the hottest brake.

S7.2 Pretest instrumentation check. Conduct a general check of test instrumentation by making not more than 10 stops from a speed of not more than 30 mph at a deceleration of not more than 10 fpsps. If test instrument repair, replacement, or adjustment is necessary, make not more than 10 additional stops after such repair, replacement or adjustment.

S7.3 Service brake system - first (preburnished) effectiveness test.

S7.3.1 Service brake system. Make six stops from 30 mph and then six stops from 60 mph with an initial brake temperature between 130° F and 150° F.

S7.3.2 Partial service brake system. For a motorcycle with two independently actuated service brake systems, repeat S7.3.1 using each service brake system individually.

S7.4 Service brake system—burnish procedure. Burnish the brakes by making 200 stops from 30 mph at 12 fpsps. The braking interval shall be either the distance necessary to reduce the initial brake temperature to between 130° F and 150° F or 1 mile, whichever occurs first. Accelerate at maximum rate to 30 mph immediately after each stop and maintain that speed until making the next stop. After burnishing adjust the brakes in accordance with the manufacturer's recommendation.

S7.5 Service brake system—second effectiveness test. Repeat S7.3.1. Then, make four stops from 80 mph and four stops from the multiple of 5 mph that is 4 mph to 8 mph less than the speed attainable in 1 mile if that speed is 95 mph or greater.

S7.6 Service brake system—fade and recovery test. These requirements do not apply to a motor-driven cycle whose speed attainable in 1 mile is 30 mph or less.

S7.6.1 Baseline check stops. Make three stops from 30 mph at 10 to 11 fpsps for each stop. Compute the average of the maximum brake pedal forces and the maximum brake lever forces required for the three stops.

S7.6.2 Fade stops. Make 10 stops from 60 mph at not less than 15 fpsps for each stop. The initial brake temperature before the first brake application shall be between 130° F and 150° F. Initial brake temperatures before brake applications for subsequent stops shall be those occurring at the distance intervals. Attain the required deceleration as quickly as possible and maintain at least this rate for not less than three-fourths of the total stopping distance for each stop. The interval between the starts of service brake applications shall be 0.4 mile. Drive 1 mile at 30 mph after the last fade stop and immediately conduct the recovery test specified in S7.6.3.

S7.6.3 Recovery test. Make five stops from 30 mph at 10 to 11 fpsps for each stop. The braking interval shall not be more than 1 mile. Immediately after each stop accelerate at maximum rate to 30 mph and maintain that speed until making the next stop.

S7.7 Service brake system—reburnish. Repeat S7.4 except make 35 burnish stops instead of 200 stops. Brakes may be adjusted after reburnish if no tools are used. These requirements do not apply to a motor-driven cycle whose speed attainable in 1 mile is 30 mph or less.

S7.8 Service brake system—final effectiveness test. These requirements do not apply to a motor-driven cycle whose speed attainable in 1 mile is 30 mph or less.

S7.8.1 Service brake system. Repeat S7.5 including S7.3.1.

S7.8.2 Partial service brake system test. Alter the service brake system on three-wheeled motorcycles to induce a complete loss of braking in any one subsystem. Determine the line pressure or pedal force necessary to cause the brake system failure indicator to operate. Make six stops from 30 mph and then six stops from 60 mph with an initial brake temperature between 130° F and 150° F. Repeat for each subsystem. Determine that the brake failure indicator is operating when the master cylinder fluid level is less than the level specified in S5.1.3.1(a) (2), and that it complies with S5.1.3.1(c). Check for proper operation with each reservoir in turn at a low level. Restore the service brake system to normal at completion of this test.

S7.9 Parking brake test. Starting with an initial brake temperature of not more than 150° F drive the motorcycle downhill on the 30 percent grade with the longitudinal axis of the motorcycle in the direction of the grade. Apply the service brakes with a force not exceeding 90 pounds to stop the motorcycle and place the transmission in neutral. Apply the parking brake by exerting a force not exceeding those specified in S5.6 Release the service brake and allow the motorcycle to remain at rest (to the limit of traction of the braked wheels) for 5 minutes. Repeat the test with the motorcycle parked in the reverse (uphill) position on the grade.

S7.10 Service brake system—water recovery test.

S7.10.1 Baseline check stops. Make three stops from 30 mph at 10 to 11 fpsps for each stop. Compute the average of the maximum brake pedal forces and of the maximum brake lever forces required for the three stops.

S7.10.2 Wet brake recovery stops. Completely immerse the rear brake assembly of the motorcycle in water for 2 minutes with the brake fully released. Next completely immerse the front brake assembly of the motorcycle in water for 2 minutes with the brake fully released. Perform the entire wetting procedure in not more than 7 minutes. Immediately after removal of the front brake from water, accelerate at a maximum rate of 30 mph without a brake application. Immediately upon reaching that speed make five stops, each from 30 mph at 10 to 11 fpsps for each stop. After each stop (except the last) accelerate the motorcycle immediately at a maximum rate to 30 mph and begin the next stop.

S7.11 Final inspection. Upon completion of all the tests inspect the brake system in an assembled condition, for compliance with the brake lining inspection requirements. Disassemble all brakes and inspect:

(a) The entire brake system for detachment or fracture of any component;

(b) Brake linings for detachment from the shoe or pad;

(c) Wheel cylinder, master cylinder, and axle seals for fluid or lubricant leakage;

(d) Master cylinder for reservoir capacity and retention device; and

(e) Master cylinder label for compliance with S5.1.2.2.

37 F.R. 5033
March 9, 1972

PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 123

Motorcycle Controls and Displays

(Docket No. 70–26; Notice 3)

This notice amends Part 571 of Title 49, Code of Federal Regulations, to add a new Motor Vehicle Safety Standard No. 123 (49 CFR § 571.123) that establishes requirements for motorcycle controls and displays. A notice of proposed rulemaking on this subject was published on November 6, 1970 (35 F.R. 17117).

The National Highway Traffic Safety Administration estimates that over 3,000 accidents may be avoided annually by specifying a uniform standard for motorcycle controls and displays. As this agency commented in the prior notice: "Controls and displays link the operator and the machine, and if there is confusion as to their location, interpretation, or operation, a dangerous situation may result. A cyclist, especially the novice and the cyclist who has changed from one make of machine to another, must not hesitate when confronted with an emergency." The purpose of the new standard is to minimize operator error in responding to the motoring environment, by standardizing certain motorcycle controls and displays.

The basic operational requirement of Standard No. 123 is that handlebar-mounted controls be operable throughout their full range without the operator removing his hand from the handgrip. Standard No. 123 requires all motorcycles to have a supplemental engine stop control, operable from the right handlebar, intended for use in emergency situations. Notice of this require ment was proposed in Notice 2 to Docket No. 69–20, *Accelerator Control Systems* (35 F.R. 15241). Standard No. 123 also requires that if any of ten other specified equipment items are provided on a motorcycle, the location and method of operation of the applicable control shall be standardized. These items are: manual clutch or integrated clutch and gear change, foot-operated gear change, headlamp upper-lower beam control, horn, turn signal lamps, ignition, manual fuel shutoff control, twist-grip throttle, front wheel brake, and rear wheel brakes. Motorcycles that are designed and sold exclusively for use by law enforcement agencies are excluded from Standard No. 123, as the configuration of certain controls on such vehicles, necessary for law enforcement purposes, differs from that required by the new standard. Proposals applicable to the instrument illumination intensity control, the electric starter, and the kick starter have not been adopted as insufficient correlation with motor vehicle safety has been found for these items.

As noted below, some of the location and operational requirements that were proposed have not been adopted in the following instances Otherwise, the location and operation of controls are required as proposed.

1. *Foot-operated gear change.* The likelihood of inadvertent engagement of reverse gear has been found to be so slight that a means to prohibit it has not been found necessary. Further, no requirement has been specified for location of neutral gear. Under Proposal A, neutral would have occurred lowest in the gear sequence. Proposal A was not adopted because of the likelihood of overshooting low gear when downshifting, thus contributing to a possible loss of control. In Proposal B, the transmission would be put into neutral by a rearward motion of the operator's heel on a control device separate from the shift lever. This method was not adopted since it appears to have no inherent safety advantages over any other means of finding neutral. The intent of Proposal B was to ensure that neutral can reliably be selected when desired without being selected inadvertently when not

desired. The conventional neutral light may serve as an aid to such shifting; however, any system which requires eye movements away from the road merely to shift gears cannot be considered to be an adjunct to safety.

The present standard does not impose specific requirements for ease of locating the gear position, or for protection against inadvertent shifting into neutral. However, the Administration considers these to be desirable objectives and will consider amending the standard if it appears necessary to do so.

2. *Headlamp control.* Because heavy gloves are needed for safe riding, only a simple "up for higher beam, down for lower beam" requirement has been adopted.

3. *Turn signal lamps.* Because turn signal lamps are not a required item of motorcycle equipment until January 1, 1973, and the industry is experimenting with various controls, Standard No. 123 specifies only that the turn signal lamp control be located on the handlebars.

4. *Ignition:* Because of the adoption of the requirement that motorcycles be equipped with a supplemental engine stop control on the right handlebar, the need to specify a location and method of operation for the ignition has diminished. Accordingly, the sole ignition control requirement is that the "off" position be counterclockwise from all other positions.

5. *Manual fuel shutoff control.* The requirements adopted do not apply to automatic fuel shutoff controls. No location for a manual control is specified. Based upon comments, revisions have been made in the direction of valve operation.

Substantial modifications have been made as well in the display proposals. Because of the limited range within which displays can be located on a motorcycle, it has been determined that no specific location requirements are necessary. Illumination of the neutral position and the speedometer has been deemed essential; the proposal that a green lamp indicate neutral position has been adopted, and the speedometer must be illuminated whenever the headlamp is activated. Because turn signals and upper beam indicators are covered in Standard No. 108, they have been omitted from the display illumination requirements of Standard No. 123.

Proposals for control identification, stands, and passenger foot-rests have been adopted substantially as proposed. Since operating instructions are invariably provided with motorcycles, the NHTSA has not adopted the proposal covering them.

Effective date: September 1, 1974. Because of the leadtime necessary for preparation for production, it is found, for good cause shown, that an effective date later than one year after the issue date is in the public interest.

In consideration of the foregoing, Title 49, Code of Federal Regulations, is amended by adding § 571.123, Motor Vehicle Safety Standard No. 123, *Motorcycle Controls and Displays*, as set forth below.

This notice is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority from the Secretary of Transportation to the National Highway Traffic Safety Administrator, 49 CFR 1.51.

Issued on April 4, 1972.

Douglas W. Toms
Administrator

37 F.R. 7207
April 12, 1972

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 123

Motorcycle Controls and Displays

This notice responds to petitions for reconsideration of Motor Vehicle Safety Standard No. 123 (49 CFR § 571.123) and amends the standard in minor respects.

Motor Vehicle Safety Standard No. 123, establishing requirements for the location, operation, identification, and illumination of motorcycle controls and displays, effective September 1, 1974, was published on April 12, 1972 (37 F.R. 7207). Thereafter, pursuant to 49 CFR § 553.35, petitions for reconsideration of the rule were filed by Japan Automobile Manufacturers Asociation, Inc. ("JAMA"), Kawasaki Motors Corp. (Kawasaki), and Cushman Motors ("Cushman") through counsel. In response to these petitions the standard is being revised in minor respects. The Administrator has declined to grant requested relief from other requirements of the standard.

1. *Manual fuel shutoff valve.* Standard No. 123 requires that the manual fuel shutoff control point downward when in the "on" position, forward in the "off" position, and upward to supply fuel from a reserve source if one is provided.

JAMA has requested that the configuration found on most Japanese motorcycles be adopted: "off" with the control position to the left, "reserve" to the right, and "on" downward. JAMA's request was originally made in response to the notice proposing control positions for the shut-off valve, and was considered at that time. JAMA's petition is denied. The NHTSA has determined that the control should be standardized by requiring its operation along a longitudinal rather than a transverse axis. In this location there is a greater likelihood that in the event of a crash, the control will be carried by inertia to the off position, thereby shutting off the fuel.

JAMA also asked for an interpretation of the words "control pointing" asking if the words mean the direction of a non-operational pointer indicating the off-position, or the direction of the control end operated by the fingers. "Control pointing" means the direction of the control end operated by the fingers. To eliminate this possible ambiguity, the word "pointing" is deleted from the entry in Table I.

2. *Headlamp control.* The NHTSA requires, in Standard No. 123, that the upper headlamp beam be activated with an upward motion of the beam control, and the lower beam by a downward motion. Kawasaki has asked that these positions be reversed. It reasons that when the left thumb is under the handlebar, the lower beam control can be more quickly activated with an upward movement of the thumb, rather than by raising the thumb above the switch and then depressing it. The Administration denies Kawasaki's request, as it is considered contrary to good human factors engineering. Control mechanisms which are used for increasing the output of a system are generally designed to be switched upward for higher intensity.

3. *Speedometer graduations.* Both JAMA and Kawasaki have petitioned for reconsideration of the requirement that major and minor graduations and numerals appear at the 10 and 5 mph intervals respectively, alleging that operator confusion could be caused by a clutter of numerals and graduations at 5 mph intervals. The NHTSA considers these petitions to have merit and is amending Standard No. 123, to require only minor graduations at the 5 mph intervals.

4. *Control identification.* JAMA has petitioned for an amendment of Table 3 to eliminate identification of some controls and to identify only control positions. The petition also requested abbreviation of the identification presently required. JAMA alleges difficulty in providing all the identification marks due to lack of

space around the handlebar. It argues that an individual operator will not mistake one equipment item for another on different cycles when all controls are uniformly located as specified by Standard No. 123.

The Administration denies JAMA's petition. Labeling control positions without identifying the control itself could confuse the novice motorcyclist and may contribute to traffic hazards. During the initial learning stage the cyclist will not be able to identify controls by their required location. Further, there are no common abbreviations with universal acceptance for the controls mentioned, *viz.*, choke, starter, horn, and neutral indicator.

JAMA also requested a clarification as to whether control identification must be indicated in capital letters. The answer is no: use of upper or lower case lettering is at the manufacturer's discretion. Kawasaki asked whether it is permissible to add information to the tachometer identification indicating that it registers thousands of revolutions per minute. The marking requirements of the standard are minimum requirements only, and the NHTSA has no objection to further identification of this nature for the tachometer.

5. *Three-wheeled motorcycles.* Cushman manufactures three-wheeled motorcycles. It alleged that many of the requirements of Standard No. 123 are incompatible with the configuration of its vehicle. It requested that Standard No. 123 be amended to exclude three-wheeled motorcycles that are designed to achieve a maximum speed no greater than 40 mph. Cushman raised a number of specific objections concerning control location and operation, identification, and displays. In view of the disposition of Cushman's petition it is not necessary to discuss the objections in detail.

Cushman's petition is denied for the following reasons. Petitioner manufactures two types of three-wheeled vehicles, identical except for steering configuration. One type employs handlebars, the other a steering wheel. Its sales literature indicates that most models manufactured with handlebars are intended for industrial applications on private property, and are not intended to be licensed as motor vehicles for use on the public roads. The remaining models manufactured with handlebars are intended for police use. Standard No. 123 does not apply to this type of vehicle. Cushman's models intended for street use are equipped with the steering wheel as standard equipment. The standard does not apply to motorcycles with steering wheels. A denial of Cushman's petition means only that, after September 1, 1974, three-wheeled motorcycles for street use may not be sold with the handlebar option.

6. *Miscellaneous.* A typographical error is corrected concerning the integrated clutch and gear change.

In consideration of the foregoing, 49 CFR § 571.123, Motor Vehicle Safety Standard No. 123, is revised . . . . *Effective date:* September 1, 1974, the same effective date as the standard as previously issued (37 F.R. 7207).

This notice is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority at 49 CFR 1.51.

Issued on August 22, 1972.

Douglas W. Toms
Administrator

37 F.R. 17474
August 29, 1972

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 123

(Docket No. 74–16; Notice 2)

This notice amends 49 CFR 571.108, 571.122, and 571.123, Motor Vehicle Safety Standards Nos. 108, 122, and 123, to modify current requirements that apply to motor-driven cycles.

Interested persons have been afforded an opportunity to participate in the making of the amendment by a notice of proposed rulemaking published on April 12, 1974 (39 F.R. 13287) and due consideration has been given to all comments received in response to the notice, insofar as they relate to matters within its scope.

The prior notice responded to petitions by Cycles Peugeot, Ateliers de la Motobecane, and S.I.N.F.A.C., manufacturers, and Bermuda Bikes, Inc., and Robert F. Smith, retail dealers. The notice proposed that a motor-driven cycle whose speed attainable in 1 mile is 30 mph or less need not be equipped with turn signal lamps, and may be equipped with a stop lamp with one-half the photometric output otherwise required. Braking fade and recovery requirements also would not apply to these low-speed vehicles. Maximum stopping distances values for the various tests would be added for test speeds of 25, 20, and 15 mph. Finally, a braking control on the left handlebar would be a permissible alternative to the required right foot braking control.

The comments received addressed both areas of performance covered in the proposal, and areas where no standards currently exist, such as motors, transmissions, pedals, and a request for exemption from Standard No. 119, *Tires for Vehicles Other Than Passenger Cars*. As these latter comments cover matters beyond the scope of the proposal, this notice does not discuss them. The agency, however, has been formally petitioned for rulemaking covering transmissions and Standard No. 119, and will respond to the petitioners in the near future.

The decision by NHTSA not to establish a separate category of vehicle was objected to by some commenters. In support of their request, they argued that the majority of motor-driven cycles have engines producing only 1.5 to 2 horsepower, and consequent low maximum speeds, reducing the need for forward lighting that is currently required of these vehicles. Petitioners submitted no data justifying their request. The NHTSA, however, intends to study the matter of forward lighting for low-powered two-wheeled vehicles through a research contract with the University of Michigan. When the contract is completed the agency will then decide whether further rulemaking is warranted.

The proposal distinguished motor-driven cycles on the basis of maximum speed attainable in 1 mile, rather than on horsepower, and the value selected, 30 mph, fell within the maximum (40 mph) and minimum (20 mph) suggested by commenters. The NHTSA has concluded therefore that the distinction should be adopted as proposed.

Some manufacturers requested restrictive controls on power plant output, apparently in fear that the engine of a vehicle with a top speed of 30 mph or less could be modified to exceed that speed, and therefore cause the vehicle to no longer comply with the Federal standards. This agency has not found that course of action to be practicable. The various ways to modify a vehicle after purchase cannot be anticipated or prevented at the manufacturer level. On the other hand, the great majority of consumers use their vehicles in the form in which they were purchased. The motor-driven cycle category itself contains a limitation of 5 horsepower, which will be applicable to the special lighting modifications. In the NHTSA's judgment, modifications by consumers and the consequent equipment requirements should continue to be regulated at the State level.

The fact that the agency took no action to propose a reduction in existing headlamp requirements for motor-driven cycles was criticized by several manufacturers as unduly restrictive because of the low speed and power output of their vehicles. No justification has been shown for such a change. Motor-driven cycles therefore must have sufficient generating and/or battery capacity to meet the headlamp requirements.

There was no substantive objection to the actual proposals for omission of turn signals, reduced stop lamp photometrics, relief from brake fade requirements, inclusion of maximum allowable stopping distances for low speeds, and rear brake control placement. Accordingly, the standards are being amended in the manner proposed.

Standard No. 122 is also being amended to delete the final effectiveness test (S5.5) for those motor-driven cycles excused from the fade and recovery requirements. The purpose of the final effectiveness test is to check the stopping ability of the vehicle after the fade and recovery tests. Since this requirement has been eliminated for motor-driven cycles of low top-speed, the final effectiveness test is redundant, and an unnecessary duplication of the second effectiveness test. No safety purpose is served by its retention. Language is also added to the fade and recovery and final effectiveness test procedures (S7.6, S7.7, and S7.8), making it clear that they do not apply to motor-driven cycles whose speed attainable in 1 mile is 30 mph or less.

In consideration of the foregoing, 49 CFR Part 571 is amended . . . .

Effective date: October 14, 1974. As the amendments allow new options for compliance, relieve restrictions, and impose no additional burdens on regulated persons, it is found for good cause shown that an effective date earlier than 180 days after issuance of the amendments is in the public interest.

(Sec. 103, 119, Pub. L. 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on September 6, 1974.

James B. Gregory
Administrator

39 F.R. 32914
September 12, 1974

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 123

Federal Motor Vehicle Safety Standards; Motorcycle Controls and Displays
[Docket No. 80-05; Notice 2]

ACTION: Final rule.

SUMMARY: The purpose of this notice is to amend Safety Standard No. 123, *Motorcycle Controls and Displays*, to allow use of "r/min" as an alternative to "R.p.m." to indicate revolutions per minutes to the tachometer. This action is taken pursuant to a grant of two petitions for rulemaking. A notice of proposed rulemaking was published on Arpil 10, 1980 (45 FR 24515). The primary benefit of the amendment is that it will allow use of metric units for identification that are widely used by other countries.

EFFECTIVE DATE: September 20, 1983.

SUPPLEMENTARY INFORMATION: The Japan Automobile Manufactuers Association, Inc. and the Motorcycle Industry Council, Inc. petitioned for rulemaking to amend Federal Motor Vehicle Safety Standard No. 123, *Motorcycle Controls and Displays*, to provide the option of using "r/min" as well as the existing "R.p.m." letters on the tachometer to indicate revolutions per minute.

According to petitioners, such an amendment would allow metric units for identifications that are widely accepted internationally. Under the metric system the unit describing rotational frequency is "r/min", recognized by both the International Standards Organization and the U.S. Society of Automotive Engineers. Such an amendment would not affect safety and would be in the interest of international standards harmonization.

The agency granted the petitions and on April 10, 1980, proposed alternative amendments (45 FR 24515). The first, effective upon publication, would have allowed optional use of "R.p.m." or "r/min". The second would have allowed "r/min" immediately upon publication" and required its exclusive use eventually.

All comments to the notice of proposed rulemaking supported the first alternative, and the standard is being amended to allow use of either "R.p.m." or "r/min" as an acceptable means of identification of revolutions per minute. It should be understood that this requirement is inclusive of minute variations from the letters indicated, such as use of capital letters or omission of periods, and that such usage or omission will not be deemed failures to comply with Standard No. 123. Because the amendment imposes no additional burden on any persons and contributes to the international harmonization of vehicle standards, it is hereby found for good cause shown that an effective date earlier than 180 days after issuance of this amendment is in the public interest.

The agency's examination has shown that this rulemaking action is not a major regulation under Executive Order 12291 "Improving Government Regulations," or a significant regulation under the Department's regulatory policies and procedures, and that a regulatory impact analysis is not required. Further, the cost impacts will be so minimal that preparation of a full regulatory evaluation is not warranted. Amendment of the standard will impose no additional manufacturer requirements but will allow producers flexibility to adopt tachometers that are now precluded by the current requirements of Standard No. 123. The cost savings resulting from taking advantage of that flexibility would be insubstantial.

The agency has also considered the impacts of this amendment in relation to the Regulatory Flexibility Act. I certify that amending Standard No. 123 would not have a significant economic effect on a substantial number of small entities. Accordingly, no initial regulatory flexibility analysis has been prepared. Based on available information, the agency believes no manufacturers of motorcycles are

small businesses as that term is defined for purposes of the Flexibility Act. Small organizations and governmental jurisdictions which purchase fleets of motor vehicles would probably not be significantly affected. The difference in cost of vehicles equipped with current tachometers and those permitted by the amendment would be insubstantial at most.

In consideration of the foregoing, the letters "R.p.m." in Column 2 of Table 3 of 49 CFR 571.123, Motor Vehicle Safety Standard No. 123, are revised to read "R.p.m. or r/min".

Issued on September 14, 1983.

Diane K. Steed
Deputy Administrator

48 FR 42819
September 20, 1983

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 123

Motorcycle Controls and Displays
[Docket No. 83-13; Notice 2]

ACTION: Final rule

SUMMARY: The purpose of this notice is to amend Safety Standard No. 123, *Motorcycle Controls and Displays*, to allow greater flexibility in mounting the manual fuel control shut-off valve. This action is taken pursuant to a grant of a petition for rulemaking and a notice of proposed rulemaking published on September 6, 1983 (48 FR 40286). Its primary benefit is that it will relieve a current design restriction which is demed no longer necessary for motor vehicle safety.

EFFECTIVE DATE: October 8, 1984.

SUPPLEMENTARY INFORMATION: Table 1 of Standard No. 123 specifies that the manual fuel shut-off control have the following modes of operation: "off", with the control forward, "on", with the control downward, and "reserve" (if provided), with the control upward. No requirements are specified for the location of the control. However, Standard No. 123 has generally been interpreted as requiring control rotation around a transverse axis.

In March 1981 Bajaj Auto Ltd. asked NHTSA for an "exemption" from this requirement in order to mount its fuel shut-off control so that it could be rotated around a longitudinal axis. In establishing the original operational modes, NHTSA had justified them by stating that in the event of a crash there was a greater likelihood that the control would be carried forward by inertia to the "off" position, thereby shutting off the fuel. In Bajaj's opinion, this effect would be unlikely except in the most severe collisions because of the low weight of the operating control lever, and the tightness of the control valve necessary to guard against inadvertent closure of the control in normal operation. After deliberation, and its own informal investigation, the agency concurred with Bajaj's reasoning and decided to treat Bajaj's request as a petition for rulemaking. Bajaj was informed of this decision in 1982.

The agency tentatively decided that motor vehicle safety through standardization of controls is best served in this instance by retaining the relationships of the control positions to each other while allowing the manufacturer to place the control so that it may operate in its required positions around either a longitudinal or transverse axis. It was proposed that when the control is rotated around a longitudinal axis, the "off" position shall be "horizontal" with the other positions downward for "on" and upward for "reserve on". In the horizontal position, the control can be pointing either to the right or left.

Comments were received from American Honda Motor Co., Japan Automobile Manufacturer's Association (JAMA), Kawasaki Motors Corp., USA, and BMW Bikers of Metropolitan Washington. The manufacturers supported the proposal, and requested further amendments responsive to rotation about a vertical axis. BMW Bikers urged the agency to consider the potential hazards that might result were the control relocated so far inboard as to be difficult to reach and manipulate.

More specifically, a request was made that Standard No. 123 be amended to allow future designs of manual shut-off valves that would be rotational around a vertical axis. Kawasaki recommended that rotation be allowed around any axis. It was also recommended that the rotational axis be allowed to vary by plus or minus 30 degrees, as the

exact axis of rotation (zero degrees) may be difficult to achieve because of the shape of the fuel tank and other vehicle components.

The agency has reviewed these requests and believes that they have merit as relief of design restrictions. However, the proposal did not ask for comments on the advisability of rotation around a vertical axis, or on a 30 degree tolerance. Therefore, the standard is being amended in the manner specified in the proposal.

With respect to the concern expressed by BMW Bikers, it is true that mounting the control around the longitudinal axis might make it awkward to reach and difficult to operate, but the agency does not believe that any manufacturer will change its current design in a manner that would make it less appealing to the consumer. The new location does represent a convenient location for motorscooters such as are manufactured by the petitioner.

NHTSA has considered this rule and has determined that it is not major within the meaning of Executive Order 12291 "Federal Regulation" or significant under Department of Transportation regulatory policies and procedures, and that neither a regulatory impact analysis nor a full regulatory evaluation is required. The rule imposes no additional requirements but permits manufacturers greater flexibility in locating the control concerned.

NHTSA has analyzed this rule for the purposes of the National Environmental Policy Act. The rule will have no effect on the human environment since the weight and quantity of materials used in the manufacture of motorcycles is not changed. No impact on safety is anticipated.

The agency has also considered the impacts of this rule in relation to the Regulatory Flexibility Act. I certify that this rule will not have a significant economic impact on a substantial number of small entities, and no initial regulatory flexibility analysis has been prepared. Manufacturers of motorcycles, those affected by the rule, are generally not small businesses within the meaning of the Regulatory Flexibility Act. Finally, small organizations and governmental jurisdictions will not be significantly affected since the price of new motorcycles will be minimally impacted.

Because the amendment relieves a restriction, is optional in nature, and furthers international harmonization, it is hereby found for good cause shown that an effective date earlier than 180 days after issuance is in the public interest, and the amendment is effective 30 days after publication in the *Federal Register*.

In consideration of the foregoing, the operation requirements for the manual fuel shut-off control (item 7) in Column 3 of Table 1 of 49 CFR 571.123, Motor Vehicle Safety Standard No. 123, are revised to read as follows:

"on"—Control downward.

"off "—Control forward (if control rotates around a transverse axis) or Horizontal—Left or Right (if control rotates around a longitudinal axis).

"reserve on"—(if provided) Control upward.

(Secs. 103, 119, Pub. L. 87-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.50.)

Issued on August 31, 1984.

Diane K. Steed
Administrator

49 FR 35380
September 7, 1984

PREAMBLE TO AN AMENDMENT TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 123

Motorcycle Controls and Displays
[Docket No. 83-14; Notice 2]

ACTION: Final rule.

SUMMARY: Standard No. 123, *Motorcycle Controls and Displays*, specifies requirements for the location, operation, identification and illumination of controls and displays in two- and three-wheeled motor vehicles. This notice amends Standard No. 123 by adding symbols as an option to the words which are presently required to identify motorcycle controls and displays. This amendment brings the standard into harmony with latest documents promulgated by the International Standard Organization. The changes should reduce compliance costs by promoting international harmonization. This action results in part from a petition for rulemaking submitted by BMW of North America.

A notice of proposed rulemaking on this subject was published on September 6, 1983 (48 FR 40282).

EFFECTIVE DATE: October 11, 1984.

SUPPLEMENTARY INFORMATION: Standard No. 123, *Motorcycle Controls and Displays*, specifies requirements for the location, operation, identification and illumination of controls and displays in motorcycles. The purpose of the standard is to ensure the accessibility and visibility of controls and displays and to facilitate their quick and proper identification and selection by a driver in order to reduce the safety hazards caused by the diversion of the driver's attention from the driving task, and by mistakes in selecting controls.

Among its requirements, Standard No. 123 specifies the use of certain words for the identification of several controls and displays. The standard is silent as to the use of symbols in addition to or in place of words. BMW of North America petitioned for rulemaking to amend the standard so that symbols may be used. Its petition was granted on August 30, 1983, and a notice of proposed rulemaking implementing the grant was published on September 6, 1983 (48 FR 40282).

The symbols proposed were those developed by the International Standards Organization (ISO). Certain ISO symbols have also been adopted by the United Nations Economic Commission for Europe (ECE) and the European Economic Community (EEC).

Costs would be reduced by facilitating international harmonization. Manufacturers which produce vehicles for sale in both this nation and abroad would not have to produce separate dashboards or controls and displays to meet conflicting identification requirements.

NHTSA proposed that Table 3 be amended by adding a new column containing ISO symbols for supplemental engine stop, manual choke, electric starter, headlamp upper-lower beam control, horn, turn signals, neutral indicator, upper beam indicator, and fuel tank shut-off valve. These symbols could be used in addition to, or in lieu of, the words presently required. A footnote was added to clarify that the framed area of certain symbols may be filled in.

There are issues associated with the use of symbols for which NHTSA was especially interested in soliciting comments.

The first of these issues was the number and type of symbols that can be used to greatest effect. The ISO is a nonregulatory body. The European regulatory body (ECE) has additional, and in some instances different, symbols. There are potential safety and cost savings advantages to reaching

consensus on the most effective symbols. In NHTSA's opinion, symbols should identify only the most important controls and displays. The proposal listed symbols covering only 9 controls and displays included in Table 3; the ISO standard for motorcycles (ISO 6727) has 22. NHTSA solicited comments on the number of those symbols that should be required or permitted, with attention to the question whether a proliferation of symbols contributes to confusion rather than providing clarification.

Another issue was whether, if the required words are used, a manufacturer should be allowed to supplement those words with symbols which it has developed on its own. Some of the ISO-approved symbols may have an unclear relationship to the function concerned, and in these instances manufacturers may have developed a more relevant symbol.

A further issue was the permissibility of deviation from exact replication of a symbol, such as use of a light symbol with four rays rather than the five depicted. The agency proposed that the symbols specified shall be "substantially in the form" shown in the new table to cover minor errors that have an inconsequential relationship to motor vehicle safety. NHTSA was interested in comments on this issue as well. A final issue was whether all symbols, including those in Standard No. 101, should be placed in a separate regulation that is not a Federal motor vehicle safety standard.

Comments on the notice were received from Japan Automobile Manufacturers Association (JAMA), Kawasaki Motors Corp. U.S.A., Yamaha Motor Corp. U.S.A., Chrysler Corp., General Motors Corp., Suzuki Motor Co. Ltd., and BMW Bikers of Washington.

The use of ISO symbols was unanimously supported, Kawasaki commenting that this is a step towards harmonization of American requirements with those of other nations. Several commenters suggested, however, that the proposed revision of Table 3 appeared redundant in requiring use of words to identify control operation (Column 4) if a symbol were also used. The agency agrees with this comment and the final rule allows several options for control and control position function identification: by only the symbol (Column 3), by wording (Column 2 and Column 4), or by both symbol and wording (Column 2, Column 3, and Column 4). In addition, a manufacturer may provide symbols and words where none are shown in the Columns. Although expressed in rewritten form, previous specifications of paragraph S5.2.3 continue to apply: permission to spell out control identification abbreviations, placement of identification on or adjacent to the control, position, and appearance of identification to the operator in an upright position.

Kawasaki pointed out to the agency that most modern motorcycles do not rely on a "choke" device but incorporate an enrichening circuit in the carburator. It asked that amendments be made to Columns 1 and 2 to reflect that fact, allowing "Mixture Enrichment" in addition to "Manual Choke", and "Enrichener" as well as "Choke". While the agency believes that most operators will continue to use the word "choke" to describe the system that enriches the fuel-air mixture, the agency has decided to extend the terminology associated with this control to acknowledge the existence of alternative technology to aid in cold starting. Table 3, Column 1 will therefore contain the equipment designation "Manual Choke or Mixture Enrichment" and Table 3, Column 2 will contain the control and display identification "Choke or Enrichener".

NHTSA's request for comments on the issue of the number and types of symbols that could be used to greatest effect was addressed only inferentially with the comment that the agency had not proposed use of all ISO symbols for motorcycles. NHTSA had also asked whether if the required words were used, a manufacturer should be allowed to supplement those words with symbols other than those of the ISO which may have an unclear relationship to the function concerned. Those who commented felt that only ISO symbols should be permitted, and some asked that the entire list be provided. The amendment that is the subject of this notice allows a manufacturer to apply its own symbols for ignition, tachometer, and speedometer as none are specified for these displays and controls in Column 3. It was brought to the agency's attention that the electric starter symbol may not be the one currently approved by the ISO. The agency has been able to substantiate that the symbol proposed (adopted by the ISO in 1981 and also the symbol specified by ECE Regulation No. 60) is the current ISO symbol and the final rule thus adopts the symbol of the proposal.

Manufacturers supported the concept of the permissibility of minor deviations from exact replication of the ISO symbols, which may be occasioned

by space limitations on small vehicles such as motorcycles. Accordingly, the standard is amended as proposed, requiring only that a symbol be "substantially in the form" shown in Column 3.

Finally, there was general agreement that symbols in Standard No. 123 and Standard No. 101, *Controls and Displays*, should be joined in a separate regulation that is not a Federal motor vehicle safety standard. The agency shall consider these comments in future rulemaking.

The agency has assessed the economic and other impacts of these amendments and determined that the amendment is neither a major rule within the meaning of Executive Order 12291 nor a significant rule under the Department of Transportation's regulatory policies and procedures. Further, the agency concludes that the economic and other consequences of these amendments are so minimal as not to require preparation of a full regulatory evaluation. The impact is minimal because the cost difference between using words and symbols is negligible and because use of symbols instead of words is optional.

In consideration of the foregoing, the following amendments are made in §571.123 and Chapter V of Title 49, Code of Federal Regulations:

1. Section S5.2.3 is revised to read:

§571.123 Standard No. 123; motorcycle controls and displays.

S5.2.3 *Control and display identification.* If an item of equipment in Table 3, Column 1, is provided, the item and its operational function shall be identified by:

(a) A symbol substantially in the form shown in Column 3; or

(b) Wording shown in both Column 2 and Column 4; or

(c) A symbol substantially in the form shown in Column 3 and wording shown in both Column 2 and Column 4.

The abbreviations "M.P.H.", "r/min", "Hi", "Lo", "L", "R", and "Res" appearing in Column 2 and Column 4 may be spelled in full. Symbols and words may be provided for equipment items where none are shown in Column 2, Column 3, and Column 4. Any identification provided shall be placed on or adjacent to the control or display position, and shall appear upright to the operator.

* * * * *

2. Table 3 is revised to read:

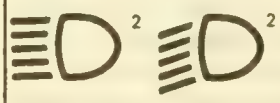
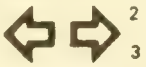
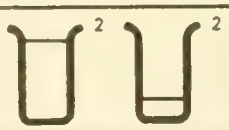
Issued on August 31, 1984

Diane K. Steed
Administrator

49 FR 35503
September 10, 1984

Table 3

Motorcycle Control and Display Identification Requirements

No.	Column 1 Equipment	Column 2 Control and Display Identification Word	Column 3 Control and Display Identification Symbol	Column 4 Identification at Appropriate Position of Control or Display
1	Ignition	Ignition		Off
2	Supplemental Engine Stop (Off, Run)	Engine Stop		Off, Run
3	Manual Choke or Mixture Enrichment	Choke or Enrichener		
4	Electric Starter			Start[1]
5	Headlamp Upper-Lower Beam Control	Lights		Hi, Lo
6	Horn	Horn		
7	Turn Signal	Turn		L, R
8	Speedometer	M.P.H.		M.P.H.[4]
9	Neutral Indicator	Neutral		
10	Upper Beam Indicator	High Beam		
11	Tachometer	R.P.M. or r/min.		
12	Fuel Tank Shutoff Valve (Off, On, Res.)	Fuel		Off, On, Res.

[1] Required only if electric starter is separate from ignition switch.

[2] Framed areas may be filled.

[3] The pair of arrows is a single symbol. When the indicators for left and right turn operate independently however, the two arrows will be considered separate symbols and may be spaced accordingly.

[4] M.P.H. increase in a clockwise direction. Major graduations and numerals appear at 10 mph intervals, minor graduations at the 5 mph intervals. (37 F.R. 17474—August 29, 1972. Effective: 9/1/74)

MOTOR VEHICLE SAFETY STANDARD NO. 123

Motorcycle Controls and Displays

(Docket No. 70-26; Notice 3)

S1. Scope. This standard specifies requirements for the location, operation, identification, and illumination of motorcycle controls and displays, and requirements for motorcycle stands and footrests.

S2. Purpose. The purpose of this standard is to minimize accidents caused by operator error in responding to the motoring environment, by standardizing certain motorcycle controls and displays.

S3. Application. This standard applies to motorcycles equipped with handlebars, except for motorcycles that are designed, and sold exclusively, for use by law enforcement agencies.

S4. Definitions. "Clockwise" and "counterclockwise" mean opposing directions of rotation around following axes, as applicable:

(a) The operational axis of the ignition control, viewed from in front of the ignition lock opening;

(b) The axis of the right handlebar on which the twist-grip throttle is located, viewed from the end of that handlebar;

(c) The axis perpendicular to the center of the speedometer, viewed from the operator's normal eye position.

S5. Requirements.

S5.1 Each motorcycle shall be equipped with a supplemental engine stop control, located and operable as specified in Table I.

S5.2 Each motorcycle to which this standard applies shall meet the following requirements:

S5.2.1 Control location and operation. If any item of equipment listed in Table 1, Column 1, is provided, the control for such item shall be located as specified in Column 2, and operable as specified in Column 3. Each control located on a right handlebar shall be operable by the operator's right hand throughout its full range without removal of the operator's right hand from the throttle. Each control located on a left handlebar shall be operable by the operator's left hand throughout its full range without removal of the operator's left hand from the handgrip. If a motorcycle with an automatic clutch is equipped with a supplemental rear brake control, the control shall be located on the left handlebar. If a motorcycle is equipped with self-proportioning or anti-lock braking devices utilizing a single control for front and rear brakes, the control shall be located and operable in the same manner as a rear brake control.

S5.2.2 Display illumination and operation. If an item of equipment listed in Table 2, Column 1, is provided, the display for such item shall be visible to a seated operator under daylight conditions, shall illuminate as specified in column 2, and shall operate as specified in Column 3.

S5.2.3 Control and display identification. [If an item of equipment listed in Table 3, Column 1, is provided, the item and its operational function shall be identified by;

(a) A symbol substantially in the form shown in Column 3; or

(b) Wording shown in both Column 2 and Column 4; or

(c) A symbol substantially in the form shown in Column 3 and wording shown in both Column 2 and Column 4.

The abbreviations "M.P.H.", "r/min", "Hi", "Lo", "L", "R", and "Res" appearing in Column 2 and Column 4 may be spelled in full. Symbols and words may be provided for equipment items where none are shown in Column 2, Column 3, and Column 4. Any identification provided shall be placed on or adjacent to the control or display position, and shall appear upright to the operator. (49 F.R. 35503—September 10, 1984. Effective: October 11, 1984)]

Control positions shall be identified as specified in Column 3, to signify the function per-

formed at that setting. The abbreviations used in Columns 2 and 3 are minimum requirements and appropriate words may be spelled in full. Identification shall appear to the operator in an upright position.

Functional identification need not be provided for equipment items with no entry in Column 3.

S5.2.4 Stands. A stand shall fold rearward and upward if it contacts the ground when the motorcycle is moving forward.

S5.2.5 Footrests. Footrests shall be provided for each designated seating position. Each footrest for a passenger other than an operator shall fold rearward and upward when not in use.

TABLE 1.—Motorcycle Control Location and Operation Requirements

Equipment Control	Location	Operation
Column 1	*Column 2*	*Column 3*
1. Manual clutch or integrated clutch and gear change	Left handlebar	Squeeze to disengage clutch.
2. Foot operated gear change	Left foot control	An upward motion of the operator's toe shift transmission toward lower numerical gear ratios (commonly referred to as "higher gears"), and a downward motion toward higher numerical gear ratios (commonly referred to as "lower gears"). If three or more gears are provided it shall not be possible to shift from the highest gear directly to the lowest gear, or vice versa.
3. Headlamp upper-lower beam	Left handlebar	Up for upper beam, down for lower beam. If combined with the headlight on-off switch, means shall be provided to prevent inadvertent actuation of the "off" function.
4. Horn	Left handlebar	Push to activate.
5. Turn signal lamps	Handlebars	
6. Ignition		"Off—counterclockwise from other positions.
7. Manual fuel shutoff control		["On"—Control downward. "Off—Control forward, (if control rotates around a transverse axis) or Horizontal—Left or Right (if control rotates around a longitudinal axis). "Reserve On"—(if provided) Control upward. (49 F.R. 35380—September 7, 1984. Effective: October 8, 1984)]
8. Twist-grip throttle	Right handlebar	Self-closing to idle in a clockwise direction after release of hand.
9. Supplemental engine stop	Right handlebar	
10. Front wheel brake	Right handlebar	Squeeze to engage.
11. Rear wheel brakes	Right foot control [1] Left handlebar permissible for motor-driven cycles.	Depress to engage.

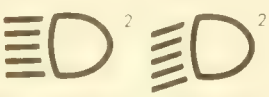
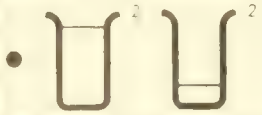
[1] See S5.2.1 for requirements for vehicles with a single control for front and rear brakes, and with a supplemental rear brake control.

TABLE 2.—Motorcycle Display Illumination and Operation Requirements

Display	Illumination	Operation
Column 1	*Column 2*	*Column 3*
1. Speedometer	Yes	The display is illuminated whenever the headlamp is activated.
2. Neutral indication	Green display lamp	The display lamp illuminates when the gear selector is in neutral position.

Table 3

Motorcycle Control and Display Identification Requirements

No.	Column 1 Equipment	Column 2 Control and Display Identification Word	[Column 3 Control and Display Identification Symbol	Column 4 Identification at Appropriate Position of Control or Display
1	Ignition	Ignition		Off
2	Supplemental Engine Stop (Off, Run)	Engine Stop		Off, Run
3	Manual Choke [or Mixture Enrichment]	Choke [or Enrichener]		
4	Electric Starter			Start[1]
5	Headlamp Upper-Lower Beam Control	Lights		Hi, Lo
6	Horn	Horn		
7	Turn Signal	Turn		L, R
8	Speedometer	M.P.H.		M.P.H.[4]
9	Neutral Indicator	Neutral		
10	Upper Beam Indicator	High Beam		
11	Tachometer	R.P.M.		
12	Fuel Tank Shutoff Valve [(Off, On, Res.)]	Fuel		Off, On, Res.]

[1] Required only if electric starter is separate from ignition switch.

[2] Framed areas may be filled.

[3] The pair of arrows is a single symbol. When the indicators for left and right turn operate independently however, the two arrows will be considered separate symbols and may be spaced accordingly.

[4] M.P.H. increase in a clockwise direction. Major graduations and numerals appear at 10 mph intervals, minor graduations at the 5 mph intervals. (49 F.R. 35380—September 7, 1984. Effective: October 8, 1984)

PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 124

Accelerator Control Systems

(Docket No. 69–20; Notice 3)

The purpose of this notice is to establish a new motor vehicle safety standard that specifies requirements for accelerator control systems of passenger cars, multi-purpose passenger vehicles, trucks and buses.

A notice of proposed rulemaking on this subject was published September 30, 1970 (35 F.R. 15241). The majority of comments received supported the proposal. There were some objections and questions, which have been considered in formulating the final rule.

In the previous notice, the Administrator indicated the importance of this standard in reducing the number of accidents caused by runaway engines. Since 1966, sixty recall campaigns totalling over 2.9 million vehicles have involved this problem. Three percent of all complaints in the Administration's files have reported malfunctioning accelerator or carburetor systems. Because the ability of a driver to control his vehicle is directly related to the proper functioning of the accelerator control system, it is essential that this system perform as expected, especially when the driver removes the actuating force. Therefore, the standard sets requirements to ensure the reliability of accelerator control systems over a wide range of driving conditions. Each system must include two independent sources of energy (such as springs) which shall return the throttle to idle upon the removal of the actuating force. In the case of breakage or disconnection in the accelerator system, the throttle shall return to idle either at the time of breakage or at the removal of the actuating force.

The latter requirement differs from the NPRM, which mandated a return to idle only when the actuating force was removed. Industry comments raised valid objections to this requirement. In some cases, if a breakage occurred and the system had to keep operating until the driver took his foot off the pedal, a complicated system of sensors would have to be built into the throttle which would activate the redundant energy sources precisely at the time of actual removal. Such a device would be too expensive for its possible safety benefit, since the incidence of accidents from engine loss of power are minimal when compared with runaway overspeed statistics. Manufacturers, therefore, have been given the option to use either return-to-idle mode.

Although many comments suggested modification of the temperature range, the ambient temperature levels in the NPRM are retained. A review of meteorological data indicates that these figures conform to possible driving conditions in various areas of the United States.

There are four other proposed requirements in the NPRM that are not included in the final rule. These are the 300-pound force requirement, the coverage of automatic speed control systems, the freedom-of-movement requirement, and the coverage of motorcycles.

Several commenters raised objections to the 300-pound overforce, and some asked for a lesser force than 300 pounds. It was found on review that the safety benefits of an overforce test has not been demonstrated sufficiently and the requirement has been dropped from the rule.

The rule does not contain requirements for automatic speed control devices. It was found that although nine recall campaigns involving 61,176 vehicles have concerned these devices, no relationship to accelerator overspeed accidents could be established from automatic speed controls. Of the 540 multi-disciplinary accident

reports that were studied in formulating the final rule, none mentioned the automatic system. The requirements of the NPRM reiterated SAE recommendations that are already used by manufacturers.

The "freedom-of-movement" paragraph raised the objections of subjectivity and difficulty of implementation. Enforcement through compliance testing would lead to controversy over the imprecise meaning of "necessary chafing." It appears that to comply with the final rule, the accelerator system will have to be free of excessive and unsafe rubbing and friction.

The decision to eliminate motorcycles from the applicability of this standard is based on the fact that motorcycles are so different in design from the other vehicles covered that definitions and failure modes are dissimilar. Also, a safety standard specifically tailored for motorcycle controls (Docket 70–26) will be issued this year.

This issue of the Federal Register contains a Notice of Proposed Rule-making to amend Standard No. 124 (37 F.R. 7108). The proposal is that the two independent sources of energy would return the throttle idle within one half second after the removal of the actuating force or a breakage or disconnection in the accelerator control system.

This standard is directed at the hazard caused by a failure in the accelerator control system. Those engine overspeed incidents caused by other failure modes such as broken or worn engine mounts are not addressed by this rulemaking action. The NHTSA is presently developing performance requirements for safety under other failure modes.

In consideration of the foregoing, Part 571 of Title 49, Code of Federal Regulations, is amended by adding a new § 571.124, Motor Vehicle Safety Standard No. 124, as set forth below.

Effective Date: September 1, 1973.

Because of the development work and preparation for production that this standard will require, it is found that an effective date later than 1 year from the date of issuance is in the public interest. Accordingly, the standard is effective September 1, 1973.

This rule is issued under the authority of Sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1392, 1407) and the delegation of authority at 49 CFR 1.51.

Issued on March 31, 1972.

Douglas W. Toms
Administrator

37 F.R. 7097
April 8, 1972

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 124

Accelerator Control Systems

(Docket No. 69–20;Notice 5)

The purpose of this notice is to respond to petitions for reconsideration of Motor Vehicle Safety Standard No. 124 (49 C.F.R. 571.124), and to amend the standard to specify time requirements for the return of a vehicle's throttle to the idle position.

On April 8, 1972 (37 F.R. 7097), Motor Vehicle Safety Standard No. 124 was published, establishing requirements for accelerator control systems, effective September 1, 1973. Simultaneously, a notice was published (37 F.R. 7108) proposing that when the driver removes the actuating force from the accelerator control or in the event of a breakage or disconnection in the accelerator control system, the return to idle position shall occur within one-half second.

I. Pursuant to 49 C.F.R. 553.35, petitions for reconsideration of the rule were filed by Alfa Romeo, American Automobile Association (AAA), American Motors Corporation, Chrysler Corporation, Diamond Reo Trucks, Incorporated, Ford Motor Company, General Motors Corporation (GM), International Harvester Company, Japan Automobile Manufacturers Association (JAMA), Jeep Corporation, Jesse R. Hollins, Mack Trucks, Incorporated, MacMillan Engineering Lab, Motor Vehicle Manufacturers Association of the United States, Incorporated, (MVMA) (formerly Automobile Manufacturers Association, Incorporated), and Rolls-Royce Motors Limited.

Favorable consideration has been granted to some of these petitions, and accordingly, the standard is being amended in some minor respects. The Administrator has declined to grant requested relief from other requirements of the standard.

GM and Ford requested that vehicles over 10,000 pounds GVWR be exempted from the standard, while Mack and Diamond Reo requested an exemption for vehicles of 26,000 and 25,000 pounds or more GVWR, respectively. Petitioners argued that since these vehicles are driven by professionally trained drivers, are equipped with engine governors, have a horsepower to weight ratio that does not mandate a fail-safe requirement, and have not been the subject of a defect notification campaign, there is no need for the rule's applicability.

The NHTSA denies petitioners' request. Available information shows that accidents resulting from throttle failure do not occur only among the less experienced drivers, nor are they diminished by the presence of engine governors or by changes in the horsepower to weight ratio. Further, these vehicles have been the subject of defect notification campaigns, and accident reports submitted to the Bureau of Motor Carrier Safety disclose that an average of two accidents occur per month in which the cause is attributed to "overspeed incidents", indicating the type of failure the standard is designed to eliminate.

Additionally, GM stated that the standard's test requirements are not justified by the possible additional safety benefit that may accrue. They argued that the only method by which it could assure compliance is by immersion of the entire vehicle in a low temperature cell. GM stated that sufficient facilities to conduct such tests on all their vehicles are not available, and even if they were, the test burden is impracticable because of the complications of determining where over the length of the vehicle the ambient temperature measurements should be taken.

The NHTSA does not view Standard No. 124 as a qualification procedure by which a manufacturer can assure himself or his customers that the vehicle now has a fail-safe system. The rule is intended to provide a minimum performance requirement, and does not mandate that assurances of being in compliance must be made by immersing the total vehicle in a low temperature cell. Assurances of compliance may come from other procedures.

Several petitioners provided data showing that it is a common practice in the automobile industry to include the "throttle lever" or "actuating lever" as part of the carburetor. They ask that these devices be interpreted to be part of the fuel metering device so as to afford them greater freedom of design.

The NHTSA agrees with this interpretation. The "throttle lever" or "actuating lever" as described by the petitioners is a component of the fuel metering device.

Additionally, several petitioners requested that the definition of "idle position" be amended to take into consideration delay units or "dash pots" which are frequently used on idle settings to slow the return of the throttle during its last few degrees of rotation to prevent stalling and excessive exhaust emissions. In essence, petitioners request that the return to idle time be measured to the point at which the throttle first comes in contact with the delay unit or "dash pot." This request is in accordance with the intended meaning of the standard. For clarification, the NHTSA is amending the definition of "idle position" to be the specific point of throttle closure at which the throttle first comes in contact with an engine idle speed control device.

Mack and Alfa Romeo petitioned that "hand throttles" and throttle positioners be specifically excluded from the definition of "idle position". Petitioners stated that in the event such a device is used a return to the preset throttle position occurs upon release of the driver-operated accelerator control system. This request is granted. If a driver chooses to raise the lowest engine speed threshold by the use of a throttle positioning device, the throttle should return to that new position within the same time requirements specified in section S5.3. Accordingly, the NHTSA is amending the definition of "idle position" to provide for the use of throttle positioners.

JAMA requested that the engine warm-up provisions for cold temperatures be clarified, so that it would be possible to conduct tests "after warming up the engine according to the manufacturer's recommendation." Standard No. 124 is silent as to engine warm-up, and states only "when the engine is running" as a condition for the test. Although the advantages of following the manufacturer's warm-up procedures are recognized, it is felt that in most instances the driving public does not adhere to those recommendations. Therefore, to afford the driving public as broad a coverage of the rule as is possible, JAMA's petition is denied.

AAA and Chrysler petitioned for an amendment of the ambient temperature range. AAA urged that since colder temperatures are commonplace in Alaska and that hotter temperatures are used by vehicle manufacturers to test fuel system control devices, a more severe temperature range should be established. Chrysler stated that the minus 40 degree figure exceeds automotive practice by 30 degrees and asked that a performance level of minus 10 degrees be established.

In determining the temperature limits to be used, the NHTSA attempted to provide motor vehicle safety without establishing impracticable design goals. Weather data discloses that although temperatures of minus 40 degrees Fahrenheit are encountered in many parts of the United States, colder temperatures are unusual. For this reason, minus 40 degrees Fahrenheit was determined to be the lowest temperature consistent with the needs of motor vehicle safety. Conversely, vehicle operations in temperatures exceeding 125 degrees Fahrenheit are also unusual. Accordingly, it was determined that temperature limits of minus 40 degrees to plus 125 degrees Fahrenheit will allow for most climatic conditions encountered in the United States. The petitions are therefore denied.

Several petitioners asked for an interpretation of the phrase "The system shall include at least two sources of energy" in section S5.1 and whether it includes energy sources attached to the fuel metering service. Petitioners stated

that a strict interpretation would cause excessive design restrictions. If a return spring attached to the fuel metering device is capable of returning the throttle to its idle position after the failure of other energy sources, it meets the intent of the standard and should not be disallowed. Accordingly, paragraph S5.1 is amended by replacing the phrase "The system shall include at least two sources of energy" with "There shall be at least two sources of energy".

JAMA asked whether, if a system includes three or more springs, each spring must be independently capable of returning the throttle to the idle position. They argued that a system could still remain adequately fail-safe as long as the other springs operating together can meet the requirements. The intent of paragraph S5.1 is to eliminate the driver's dependence on a single accelerator return spring. The NHTSA concurs with JAMA's comments and is amending paragraph S5.1 to make it clear that independent capability of return springs is not required if remaining energy sources are collectively capable of returning the throttle to the idle position.

The standard as issued required that the throttle return to the idle position "whenever any element of the accelerator control system becomes disconnected or broken." Several petitioners seek an interpretation of this wording. GM suggested that a disconnection or breakage within the driver-operated accelerator control system was the only failure mode addressed by the standard. Ford asked whether the requirement was intended to cover failures caused by bending, twisting, jamming, or introduction of foreign matter. The NHTSA's intent is to assure safety under conditions of a single failure due only to a severing or disconnection in the accelerator control system. To clarify this interpretation, the NHTSA is changing the word "breakage" to "severance" in paragraph S1, and the word "broken" to "severed" in the first sentence of paragraph S5.2. Further, the phrase "whenever any element of the accelerator control system" is changed to "whenever any one component of the accelerator control system" for purposes of clarification.

Ford and JAMA petitioned that the effective date of the standard be delayed one year. Petitioners stated that additional time was necessary to allow for the creation and confirmation of design changes and to resolve any conflicts with emission control requirements.

The NHTSA considers the complexity of the requirements of standard No. 124 to be minimal and has granted relief on several issues effecting design time, and therefore sees no justification for delaying the effective date of the standard. The petitions are denied.

II. On April 8, 1972 (37 F.R. 7108) a notice was published proposing that when the driver removes the actuating force from the accelerator control or in the event of a breakage or disconnection in the accelerator control system, the return to idle position shall occur within one-half second. Available information indicates that in most instances the time for driver reaction from the accelerator control pedal to the brake is approximately one-half second, and this time was chosen for the proposal. In response to the notice, many commentors objected to the one-half second proposal and stated that it did not adequately take into consideration the viscous nature of lubricants in extremely cold temperatures and the impracticability of this time requirement for the very large systems in heavy trucks and buses. The NHTSA recognizes the validity of these objections, and allowances have accordingly been made for extreme low temperature. An idle time of 3 seconds is established for any vehicle tested or conditioned in ambient air of 0 degrees Fahrenheit or colder.

Large systems, similar to those used on rear-engine buses, have sufficient mass and friction to preclude the possibility of compliance with the one-half second proposal, unless very high spring forces, which would require large changes in pedal forces, are used. Several commentators stated that tests for conformity with the proposed requirements show that compliance would be possible if the maximum time were extended to 2 seconds. The NHTSA finds these comments to have merit, and 2 seconds is established as the maximum return time for vehicles with a GVWR over 10,000 pounds.

Many comments pertaining to passenger car systems stated that the one-half second proposed is too severe a requirement. One commentor

stated that extra time will be required if one of the return energy sources fails. It was pointed out that precedent for an extra allowance can be found in the dual braking system requirement, which allows added distance for stopping when half the system has failed. The accelerator standard, however, does not deal with a mechanism with the same redundancy as the braking system and it is felt that the maximum time selected should allow for the possibility of one energy source failing.

There are a large number of models and engine sizes in the passenger car industry, and a large number of variety of accelerator control systems are designed and built each year. One commentor suggested that ". . . a one second time limit would considerably increase design options . . ." and "presently accepted pedal feel can be retained. . . ." Accordingly, one second has been decided upon as having the qualities of providing a reasonable maximum time for compliance testing of vehicles of 10,000 pounds or less GVWR at temperatures above 0 degrees Fahrenheit.

In response to questions raised by several petitioners, "ambient temperature is defined as the surrounding air temperature, at a distance such that it is not significantly affected by heat from the vehicle under test. The definition contrasts the ambient temperature, intended to simulate a general outdoor temperature, from temperatures under the hood or otherwise in close proximity to the vehicle.

In consideration of the foregoing, 49 CFR 571.124, Motor Vehicle Safety Standard No. 124, is revised to read as set forth below.

Effective date: September 1, 1973.

This rule is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1392, 1407) and the delegation of authority at 49 CFR 1.51.

Issued on September 20, 1972.

Douglas W. Toms
Administrator

37 F.R. 20033
September 23, 1972

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 124

Accelerator Control Systems

(Docket No. 69–20; Notice 6)

The purpose of this notice is to respond to petitions for rulemaking to amend and petitions for reconsideration of Motor Vehicle Safety Standard No. 124 (49 CFR 571.124).

On September 23, 1972 (37 F.R. 20033), Motor Vehicle Safety Standard No. 124 was published specifying time requirements for the return of a vehicle's throttle to the idle position. Pursuant to 49 CFR 553.35, petitions for reconsideration were filed by Japan Automobile Manufacturers Association, Inc. (JAMA) and Volkswagen of America, Inc. Additionally, pursuant to 49 CFR 553.31, a petition for rulemaking to amend the standard was filed by the Ford Motor Company.

Favorable consideration has been granted to some of the requests and accordingly, the standard is being amended in some minor respects. The Administrator has declined to grant requested relief from other requirements of the standard.

Volkswagen requested that the test requirements for cold temperatures be clarified, in order to determine whether it is possible to use supplementary starting devices and to "pump" the accelerator control pedal during and after the presoak and prior to the test. The advantages of using supplementary devices and warmup procedures are recognized, but in many instances, the driving public either does not adhere to the manufacturer's recommended warmup procedures or uses other procedures. The intent of the standard is to afford the driving public as broad a coverage of the rule as is possible, by simulating as closely as possible actual conditions. Accordingly, for purposes of testing compliance the engine may be started by the use of any supplementary starting devices and procedures except those which would induce the vehicle into motion by the application of an external force.

Volkswagen also asked the NHTSA to define the speed at which the accelerator pedal is "to be released" to mark the beginning of the test determining the return of the throttle to idle position. The agency's intent is to provide protection in the variety of situations that may be encountered on the road. The vehicle, therefore, must be capable of meeting the requirements no matter how rapidly or slowly the driver's foot is lifted from the pedal. The actuating force actually is not "removed" from the pedal until the foot is no longer in contact with it, so the measured time period for throttle return does not begin until the instant when the foot leaves the pedal.

Further, Volkswagen asked the NHTSA to define a "running engine." Volkswagen stated that during cold testing an engine could start, run for approximately 6 seconds, and then stall. Volkswagen theorized that it would be possible to have an accelerator system fail the test requirements during this 6-second interval, although the engine would be incapable of causing a safety problem. The phrase "engine running" defines a condition without which throttle return to idle position has no significance. The intent of the standard is to prevent any safety problems caused by faulty throttle return over a broad range of operating circumstances and temperature conditions. The condition of a running engine, regardless of torque produced, is a clearly definable point at which a safety problem could begin to occur. Therefore, the vehicle must be capable of meeting the requirements whenever the engine is rotating without the application of any external force.

JAMA requested that the time requirements for maximum return to idle position when tested in temperatures between 0 and minus 40 degrees

Fahrenheit be applied "only when there is no failure of the source of energy and no disconnection or severance of components." JAMA stated that in order for a system to meet the time requirements of the rule during cold testing, the "required pedal effort would be increased to an extent that would not be acceptable to the ordinary driver." In its earlier comments to Notice 3, (37 F.R. 7097), JAMA stated that if each energy source was independently required to return the throttle to idle within the specified time requirements, increased pedal forces would be necessary. In response to this comment and to allow a manufacturer design freedom, the standard was amended by Notice 5, (37 F.R. 20033), to specify that independent capability of energy sources to return the throttle to idle position was not required. The amendment also gave an additional time allowance for return to idle position for vehicles tested or conditioned in cold temperatures. Based on these factors and on the comments received from other manufacturers, this agency's position is that the standard provides enough latitude for a manufacturer to feasibly meet the pedal force requirements and the time requirements for return to idle, even if there is a failure of one source of energy or a severance or disconnection occurs. The petition is therefore denied.

Ford pointed out that under the requirements section, S5.1 states that, "There shall be at least two sources of energy" and that this seemed at variance with the intent expressed in the preamble to Notice 5 that energy sources do not have to be contained in the accelerator control system. To further clarify the intent expressed in Notice 5, the phrase in S.5 "The vehicle shall be equipped with a driver-operated accelerator control system that meets the following requirements" is changed to "The vehicle shall meet the following requirements . . . ."

Ford also asked for a clarification of the word "failure" in S5.1. Ford stated that the word was ambiguous in that it would allow for abnormal operating conditions outside the scope of the standard's intent to assure safety under conditions of a single failure due to a severance or disconnection in the system. To clarify the standard's intent, the phrase in S5.1 which states that, "In the event of failure of one source of energy the remaining source or sources shall be capable of returning the throttle" is changed to "In the event of failure of one source of energy by a single severance or disconnection, the throttle shall return . . . ."

Further, in the first sentence of S5.2 the word "becomes" is changed to "is" and the phrase "at a single point" is added to the end of the sentence to clarify this meaning.

In consideration of the foregoing, 49 CFR 571.124, Motor Vehicle Safety Standard No. 124, is revised to read as set forth below.

Effective date: September 1, 1973.

(Sec. 103, 119, Pub. L. 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on January 24, 1973.

Douglas W. Toms
Administrator

38 F.R. 2980
January 31, 1973

MOTOR VEHICLE SAFETY STANDARD NO. 124
ACCELERATOR CONTROL SYSTEMS

(Docket No. 69-20; Notice 3)

S1. Scope. This standard establishes requirements for the return of a vehicle's throttle to the idle position when the driver removes the actuating force from the accelerator control, or in the event of a severance or disconnection in the accelerator control system.

S2. Purpose. The purpose of this standard is to reduce deaths and injuries resulting from engine overspeed caused by malfunctions in the accelerator control system.

S3. Application. This standard applies to passenger cars, multipurpose passenger vehicles, trucks, and buses.

S4. Definitions.

S4.1 "Driver-operated accelerator control system" means all vehicle components, except the fuel metering device, that regulate engine speed in direct response to movement of the driver-operated control and that return the throttle to the idle position upon release of the actuating force.

"Fuel metering device" means the carburetor, or in the case of certain engines, the fuel injector, fuel distributor, or fuel injection pump.

"Throttle" means the component of the fuel metering device that connects to the driver-operated accelerator control system and that by input from the driver-operated accelerator control system controls the engine speed.

"Idle position" means the position of the throttle at which it first comes in contact with an engine idle speed control appropriate for existing conditions according to the manufacturer's recommendations. These conditions include, but are not limited to, engine speed adjustments for cold engine, air conditioning, and emission control, and the use of throttle setting devices.

"Ambient temperature" means the surrounding air temperature, at a distance such that it is not significantly affected by heat from the vehicle under test.

S4.2 In the case of vehicles powered by electric motors, the word "throttle" and "idle" refer to the motor speed controller and motor shutdown, respectively.

S5. Requirements. The vehicle shall meet the following requirements when the engine is running under any load condition, and at any ambient temperature between minus 40° Fahrenheit and plus 125° Fahrenheit after 12 hours of conditioning at any temperature within that range.

S5.1 There shall be at least two sources of energy capable of returning the throttle to the idle position within the time limit specified by S5.3 from any accelerator position or speed whenever the driver removes the opposing actuating force. In the event of failure of one source of energy by a single severance or disconnection, the throttle shall return to the idle position within the time limits specified by S5.3, from any accelerator position or speed whenever the driver removes the opposing actuating force.

S5.2 The throttle shall return to the idle position from any accelerator position or any speed of which the engine is capable whenever any one component of the accelerator control system is disconnected or severed at a single point. The

return to idle shall occur within the time limit specified by S5.3, measured either from the time of severance or disconnection or from the first removal of the opposing actuating force by the driver.

S5.3 Except as provided below, maximum time to return to idle position shall be 1 second for vehicles of 10,000 pounds or less GVWR, and 2 seconds for vehicles of more than 10,000 pounds GVWR. Maximum time to return to idle position shall be 3 seconds for any vehicle that is exposed to ambient air at 0 to minus 40 degrees Fahrenheit during the test or for any portion of the 12-hour conditioning period.

37 F.R. 7097
April 8, 1972

PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 125

Warning Devices

The purpose of this amendment to Part 571 of Title 49, Code of Federal Regulations, is to add a new Motor Vehicle Safety Standard No. 125 (49 CFR § 571.125) that would establish shape, size, and performance requirements for warning devices that do not have self-contained energy sources. The devices are carried in motor vehicles and are erected to alert approaching motorists to the presence of a disabled vehicle.

A notice of proposed rulemaking on this subject was published on November 11, 1970 (36 F.R. 17350). The comments received in response to the notice have been considered in this issuance of a final rule.

As noted in the proposed rule, the standard will supplement the vehicular hazard warning signal lamps required by F.M.V.S.S. No. 108, *Lamps, Reflective Devices, and Associated Equipment*, in minimizing the likelihood of rear end collisions between oncoming traffic and disabled vehicles.

The standard is issued as an equipment standard and establishes requirements only for warning devices which do not have self-contained energy sources. Because provision of warning devices in new vehicles is optional, the instructions regarding the number of devices to be used are recommendations, rather than requirements, and the storage location requirement is deleted.

The standard requires that the device be bidirectional, lowers the minimum length of the triangle legs, and increases the permissible deviation from a vertical plane for the triangle when the device is placed on the road. It reduces the required minimum candlepower of the red reflective material and raises the luminance requirement for the orange fluorescent material. It also adds definitions of "reflex reflective," deletes one of the two definitions of the colors "red" and "orange," and deletes one of the two reflectivity requirements. With respect to the conditioning requirements, the standard lowers the high temperature requirement.

Several of the comments submitted by foreign motor vehicle manufacturers stated that the warning device should conform to the recommendations of international advisory groups. The Economic Commission of Europe (E.C.E.), a United Nations-sponsored council of which twenty-six nations, including the United States, are members, is in the process of developing specifications for warning triangles to be ratified by national governments. The NHTSA has adopted most of the proposed E.C.E. requirements with the exception of the minimum candlepower requirement for wide angle positioning of the device. The NHTSA has determined that a lower minimum candlepower than that required by the E.C.E. provides adequate protection and is a more realistic reflection of the state of the art.

Comments from the domestic automobile industry objecting to mandatory provision of warning devices stated that available information does not justify the additional cost of supplying them in new vehicles. The NHTSA has concluded that it is necessary to collect further data regarding effectiveness of warning devices and frequency of use by consumers so that more accurate cost-benefit analyses may be made. For these reasons, the provision of warning devices has been made optional by issuing an equipment standard.

Numerous manufacturers of fusees submitted comments which described the merits of fusees and concluded that the proposed rule would prohibit the use of fusees. Neither the rule as issued nor the proposed rule applies to devices which have a self-contained energy source, such as fusees, flare pots, and electric lanterns. Thus

these devices may continue to be used as an alternative or a supplement to the device described in the standard.

Numerous comments from private citizens and State officials expressed concern that the required triangular shape of the warning device would prohibit the triangular Slow Moving Vehicle emblem currently used on many motor vehicles. Other comments supported the use of the triangular device because the triangular shapes would be used for similar purposes, to alert oncoming traffic that a reduction of speed is necessary due to a vehicle ahead. The Administration supports the dual use of the triangular symbol and it is intended that the warning device and the Slow Moving Vehicle emblem be complementary. As discussed in the notice of proposed rulemaking, State laws regarding slow moving vehicle emblems would be preempted by the standard only to the extent that they forbid the use of the triangular warning device intended by the standard.

Many comments recommended that the warning device be bi-directional in order to eliminate the possibility of placing the warning device with the non-reflective side facing oncoming traffic. It was pointed out that the increased cost of a bi-directional device over a unidirectional device would be minimal relative to the safety benefits provided. The NHTSA agrees, and accordingly the standard as issued requires the device to be bi-directional.

Some commenters felt that the motorist would subject himself to an additional safety hazard in placing the device approximately 100 feet behind the vehicle. Some suggested that the device be placed either on top of the vehicle or be capable of attaching to a window frame. While it is of course true that walking in a roadway can be hazardous, in the judgment of the NHTSA this risk is outweighed by the safety benefits of positioning the device at a distance behind the vehicle. Such positioning provides a greater distance over which oncoming traffic can recognize and respond to the warning and thus affords greater protection to the disabled vehicle.

Figures 3 through 9 indicating recommended positioning of warning devices have been consolidated into a single diagram indicating the suggested placement of the devices.

The permissible deviation from a vertical plane for the triangle when the device is placed on the road has been increased from five degrees to ten degrees in response to comments from manufacturers. The NHTSA has determined that the change will not alter the effectiveness of the device. The required distance above the ground of the lower edge of the triangle has been increased from one-half to one inch to improve the effectiveness of the device when water or mud collects on the roadway.

The minimum length of the legs of the triangle has been lowered from 18 to 17 inches, to correspond to the range of lengths permitted by the Bureau of Motor Carrier Safety.

The minimum width of the red reflective material has been clarified at the request of two manufacturers of reflex reflectors to correspond to industry terminology.

The definitions of the colors "red" and "orange" have been clarified in light of the comments, by the deletion of the definition in terms of nanometers. The NHTSA has concluded that definitions in terms of chromaticity coordinates and purity are sufficient. In order to standardize the requirement with respect to current color specification practice, the required chromaticity coordinates have been changed slightly.

The reflectivity requirement has been clarified to state that the material must be reflex reflective, and a definition of "reflex reflective" has been added to the standard. The reflectivity requirement in terms of candlepower per square inch has been found to be superfluous, and accordingly has been deleted.

The Economic Commission of Europe requested that the required total minimum candlepower per incident foot candle for an observation angle of 0.2 degrees be lowered from 120 candlepower fo correspond to the international specifications. The NHTSA has concluded that 80 candlepower will provide sufficient protection and the minimum candlepower has been lowered accordingly.

In order to standardize the requirement with respect to current photometric practice, the luminance requirement for orange fluorescent material in the warning device has been raised from not less than 30 percent to not less than

35 percent of that of a flat magnesium oxide surface. The luminance criterion, "when compared under the light from an overcast sky," has been changed to read "when subjected to a 150–watt high pressure xenon compact arc lamp."

Many equipment manufacturers stated that the 200 degree Fahrenheit requirement for the high temperature conditioning is not justified by evidence showing that the device must withstand temperatures at that level when in use. This contention has been found to have merit, and the temperature requirement has been lowered to 150 degrees.

Effective date: January 1, 1974. Because the standard is issued later than anticipated, the effective date has been extended from January 1, 1972 to January 1, 1974. The NHTSA has concluded that this date will permit manufacturers of warning devices which do not have self-contained energy sources and which do not meet the specifications of the standard to retool for manufacture of complying devices. It is therefore found, for good cause shown, that an effective date more than one year from the date of issuance is in the public interest.

In consideration of the above, a new § 571.125, Standard No. 125, Warning Devices, is added to Title 49, Code of Federal Regulations. . . .

This rule is issued under the authority of sections 103, 112, and 119 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1392, 1401, 1407) and the delegation of authority at 49 CFR 1.51.

Issued on March 1, 1972.

Charles H. Hartman
Acting Administrator

37 F.R. 5038
March 9, 1972

PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 125

Warning Devices

(Docket 4–2; Notice 5)

The purpose of this notice is to respond to petitions for reconsideration of Motor Vehicle Safety Standard No. 125, Warning Devices, in § 571.125 of Title 49, Code of Federal Regulations. The standard was issued on March 1, 1972 (37 F.R. 5038).

The Amerace-Esna Corporation suggested that the 98% purity requirement for the red reflex reflective material be deleted since the trichromatic color coefficients provide sufficient definition of the red color. The NHTSA agrees, and furthermore has determined that the purity requirement for the orange fluorescent material should be deleted for the same reasons. Accordingly, S5.3.1(c) and S5.3.2(c) are deleted from the rule.

Hawes Industries, Inc. requested that the standard permit the use of a triangular warning device designed to be secured on the roof of a motor vehicle. They stated that the roof location was more convenient to the consumer than the recommended positioning behind the car and afforded as much or more protection. As stated in the preamble to the standard, a number of comments advocating positioning of the device on the vehicle roof or side were received and reviewed by the NHTSA in the formulation of the final rule. The Administration determined that placement of the device behind the vehicle would provide maximum protection by affording a greater distance for recognition and response by oncoming traffic. For this reason, it has recommended positioning of the device 100 feet behind the vehicle and requires an illustration indicating this location to be provided in the instructions. The standard does not prohibit manufacture or sale of a device capable of being mounted on a vehicle roof, as long as it meets all the Standard 125 requirements, including the capability of being set up on the ground.

The standard requires that an illustration depicting recommended positioning of the device be included with the instructions for the device. The Administration is amending S5.1.5(c) to clarify its intent that the illustration provided be substantially identical to Figure 3.

The standard as issued establishes separate width requirements for red reflex reflective material and orange fluorescent material affixed to the faces of the warning device. Rowland Development Corporation stated that it manufactures a "dual purpose fluorescent orange-red reflective material," and requested that the separate width requirements be suspended when such material is used. The request appears to have merit, but NHTSA has concluded that an evaluation of the requirements pertaining to the fluorescent orange material is necessary before it can respond to this request. A notice of proposed rulemaking containing proposed changes will be issued when the evaluation is completed. When the final revised requirements for the fluorescent material are established, a precise definition of the dual purpose material can be formulated.

Prof. D. M. Finch of the University of California stated that in order to clarify the color requirements the respective sources of illumination for the measurement of the red and orange color should be specified. The NHTSA agrees that this should be done, and accordingly S5.3.1 has been modified to specify the use of a lamp with a tungsten filament operating at 2,854° K for the red measurement. The source of illumination for the measurement of the orange color will be specified with the revision of the fluorescent material requirements referred to above.

The word "tungsten" is inserted before the word "filament" in the rule, as a clarification of the test conditions for red color and reflectivity.

In consideration of the foregoing, Motor Vehicle Safety Standard No. 125, Warning Devices, 49 CFR § 571.125, is amended. . . .

Effective date: January 1, 1974.

This notice is issued under the authority of sections 103, 112, and 119 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1392, 1401, 1407) and the delegation of authority at 49 CFR 1.51.

Issued on June 19, 1972.

Douglas W. Toms
Administrator

37 F.R. 12323
June 22, 1972

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 125

Warning Devices

Docket No. 4–2; Notice 6)

The purpose of this notice is to respond further to petitions for reconsideration and amendment of Motor Vehicle Safety Standard No. 125, Warning Devices, § 571.125 of Title 49, Code of Federal Regulations. The standard was issued on March 1, 1972, (37 F.R. 5038). On June 22, 1972, a previous notice of amendments and reconsideration of the standard was published (37 F.R. 12323).

With respect to the configuration of the device Rowland Development Corporation stated that it manufactures a dual purpose fluorescent orange and red reflective material and requested that the separate width requirements for red reflex reflective material and orange fluorescent material affixed to the faces of the device be suspended when such material is used. The NHTSA has concluded that the use of such dual purpose material as an alternative to separate material is permissible if the material is capable of meeting the requirements of Standard 125. S5.1.1, S5.2.3, S5.5, and S6.2(a) are hereby modified accordingly, and the separate width requirements will not be applicable when dual purpose material is used.

Tri-Lite interpreted the standard as permitting the use of a flag as part of a "combination signal device" as long as the device did not violate S5.2.1(b), relating to obstruction of the reflective and fluorescent material. In a previous letter to Tri-Lite the NHTSA had stated that the standard would be interpreted to allow such additions. (Docket entry N4–4–2–10, July 18, 1972.) Upon further consideration, the agency has determined that permitting additions to the device will lessen its effectiveness by degrading the uniformity of its shape. Accordingly, the use of additional shapes or attachments will not be permitted, and a new S5.2.6 is added to that effect.

A number of petitions regarding the orange fluorescent material were received. Personnel from the National Bureau of Standards suggested that the requirements for the color of the orange fluorescent material be amended so as not to penalize colors that have the same hue but are stronger than the present maximum y and minimum x values. The NHTSA agrees with the suggestion and S5.3.2 has been amended accordingly.

Tri-Lite stated that the fluorescent material deteriorates over time and is therefore unreliable. It requested that the provision of orange fluorescent material on the device be made optional. The NHTSA recognizes that deterioration of fluorescence is a possibility; however, it is felt that the requirement of an opaque container and the improving technology of fluorescent materials should offset the possible problem. It is anticipated that the device will be used only infrequently, in emergencies, by most drivers. The request of Tri-Lite is therefore denied.

Rowland Corp. requested that the luminance requirement be expressed in terms relative to the amount of fluorescent material affixed to the device rather than the percentage figure of magnesium oxide presently required. The agency position is that a minimum level of luminance is necessary for identifiability, but that a somewhat lower limit for luminance of the orange material could be suitable if more material is used. Accordingly, S5.5 has been amended to lower the minimum relative luminance relative to magnesium oxide from 35% to 25%, and to require a minimum product of that relative luminance and width in inches of the device of 44. Dayglo Color Corp. requested that two sources of light for luminance test, Source C and Source D–65, be permitted in addition to the xenon arc lamp

specified in the standard. The NHTSA has concluded that the most consistent test results are provided when the material is diffusely irradiated with undispersed light from a high-pressure xenon arc lamp to simulate daytime conditions. As a general rule, alternative test procedures for a single property are inadvisable, and no sufficient justification for them has been shown here. Therefore the Dayglo request is denied.

In light of evidence that differing relative luminance values are obtained from different procedures used to measure it, a procedures paragraph (S6.3) for the luminance testing of the orange fluorescent material has been added to the standard. The procedure is adapted from the publication "Colorimetry", of the International Commission on Illumination (CIE Publication No. 15, E–1.3.1, 1971).

Two petitions dealt with the stability requirements. Rowland Development Corporation requested that the standard permit the manufacture of a triangle device constructed of flexible material which is secured at the outer corners of the triangle and is otherwise free to flex with the wind. Safety Triangles Company requested that the device be permitted to tilt to a position up to 30° from the vertical rather than the presently allowed 10°. These requests were directed at permitting manufacturers to produce lighter and cheaper devices. TheNHTSA has concluded that if the triangle is permitted to flex in the wind or tilt to a position up to 30° from the vertical, the attitude of the triangle is altered so that the shape of the equilateral triangle is distorted, thus detracting from one of the goals of the standard. The present performance requirements and the consequent cost factors have been found to be reasonable. These requests are accordingly denied.

With respect to reflectivity testing, Rowland stated that candlepower requirements for an observation angle of 0.2° were superfluous and not related to true highway situations, and requested their deletion. The NHTSA has determined in the formulation of the standard that the specified reflectivity requirements allow a maximum recognition and detection distance to oncoming traffic. Accordingy, the requirements for the 0.2° observation angle are retained

In consideration of the foregoing, Motor Vehicle Safety Standard No. 125, Warning Devices, 49 CFR § 571.125, is amended. . . .

Effective date: January 1, 1974.

(Sec. 103, 112, 119, Pub. L. 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1407; delegation of authority at 49 CFR 1.51.)

Issued on January 23, 1973.

Douglas W. Toms
Administrator

38 F.R. 2760
January 30, 1973

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 125

Warning Devices

(Docket No. 74–2; Notice 10)

The purpose of this amendment to Motor Vehicle Safety Standard No. 125 (49 CFR 571.125), Warning Devices, is to prescribe the color specifications for the orange and red materials used in the warning devices authorized under the standard.

On April 6, 1973, the NHTSA issued a proposal on this subject (38 F.R. 8752). The comments from industry were generally in agreement with the method for testing the orange fluorescent material, although several requested that light source C be allowed for testing of the orange fluorescent material. After consultation with testing laboratories and the National Bureau of Standards, NHTSA has concluded that for purposes of obtaining repeatable results and simulating daylight conditions, source C does not provide the necessary ultraviolet radiation. Therefore, the use of the xenon arc lamp has been incorporated into the standard and will be required for testing of the orange color and luminescence of the daylight fluorescent material.

The majority of the commenters and the National Bureau of Standards agreed that the direct illumination method for testing of standard orange fluorescent material for both color and luminance should be continued, and the integrating sphere method should be used for dual-purpose materials. The industry, including the testing laboratories, have had sufficient time to utilize this method and repeatable results have been obtained.

The color definition equation for the orange fluorescent material has been broadened from $x+y=0.943$ to $x+y=0.93$. The majority of those commenting had no objection to broadening the area of the orange fluorescent material, but one equipment manufacturer desired the red boundary to be extended from $y=0.35$ to $y=0.34$. NHTSA concludes that to do so would place this boundary line too near the red area for proper differentiation between orange and red. Since orange is used as a daylight material, it should not be similar to the red material in color.

As proposed, the three-digit system in the straight-line equations for the boundary of the orange and red colors has been converted to a two-digit system, as this degree of accuracy is sufficient for general testing purposes.

The final amendment to the standard establishes the type of light to be used for testing the orange material used in dual purpose material. Of particular importance in this test procedure is separating the red retroreflective and orange fluorescent material. The majority of the commenters and the National Bureau of Standards recommended that the xenon arc lamp be used, as it provides sufficient ultraviolet radiation to simulate daylight conditions with overcast sky, if the unmodified spectrum illuminating the material is at an angle of incidence of 45° and the angle of observation is 90°. In this procedure, which is adopted, the material is illuminated diffusely by an integrating sphere.

Because a number of amendments to Standard No. 125 have been issued, the standard is hereby reissued in its entirety.

In light of the foregoing, 49 CFR § 571.125, Standard No. 125, Warning Devices, is amended to read as set forth below.

Effective date: Nov. 11, 1974.

Issued on: Aug. 2, 1974.

James B. Gregory
Administrator
39 F.R. 28636
August 9, 1974

(Sec. 103, 119, Pub. L. 89–563) 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

MOTOR VEHICLE SAFETY STANDARD NO. 125

Warning Devices

S1. Scope. This standard establishes requirements for devices, without self-contained energy sources, that are designed to be carried in motor vehicles and used to warn approaching traffic of the presence of a stopped vehicle, except for devices designed to be permanently affixed to the vehicle.

S2. Purpose. The purpose of this standard is to reduce deaths and injuries due to rear end collisions between moving traffic and disabled vehicles.

S3. Application. This standard applies to devices without self-contained energy sources, that are designed to be carried in motor vehicles and used to warn approaching traffic of the presence of a stopped vehicle, except for devices designed to be permanently affixed to the vehicle.

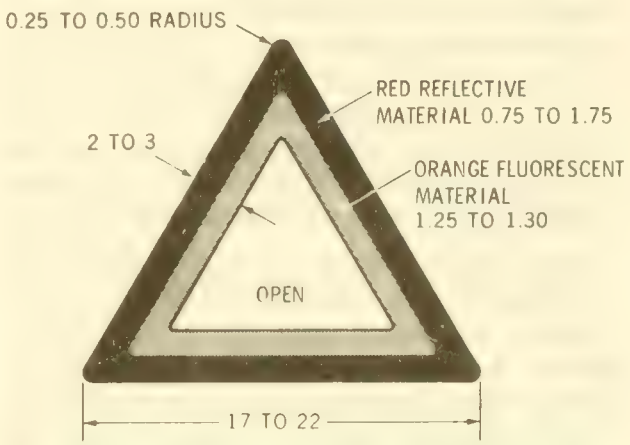
S4. Definitions. "Entrance angle" means the angle having as its sides the line through the center, and normal to the face, of the object to be tested, and the line from the center of the object to the center of the source of illumination (Figure 2).

"Fluorescent" means the property of emitting visible light due to the absorption of radiation of a shorter wave-length which may be outside the visible spectrum.

"Observation angle" means the angle having as its sides the line from the observation point to the center of the object to be tested and the line from the center of that object to the center of the source of illumination (Figure 2).

"Reflex reflective" means reflective of light in directions close to the direction of incident light, over a wide range of variations in the direction of incident light.

WARNING DEVICE



DIMENSIONS OF WARNING DEVICE (Inches)

Figure 1

S5. Requirements.

S5.1 Equipment.

S5.1.1 Reflex reflective material and fluorescent material that meet the requirements of this standard shall be affixed to both faces of the warning device. Alternatively, a dual purpose orange fluorescent and red reflective material that meets the requirements of this standard (hereafter referred to as "dual purpose material") may be affixed to both faces in place of the reflective and fluorescent materials.

S5.1.2 Each warning device shall be protected from damage and deterioration—

(a) By enclosure in an opaque protective reusable container, except that two or three warn-

ing devices intended to be sold for use as a set with a single vehicle may be enclosed in a single container; or

(b) By secure attachment to any light-tight, enclosed and easily accessible compartment of a new motor vehicle with which it is supplied by the vehicle manufacturer.

S5.1.3 The warning device shall be designed to be erected, and replaced in its container, without the use of tools.

S5.1.4 The warning device shall be permanently and legibly marked with:

(a) Name of manufacturer;

(b) Month and year of manufacture, which may be expressed numerically, as "6/72", and

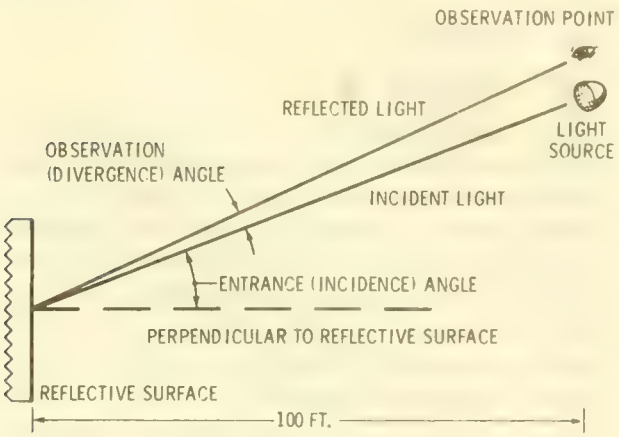
(c) The symbol DOT, or the statement that the warning device complies with all applicable Federal motor vehicle safety standards.

S5.1.5 Each warning device shall have instructions for its erection and display.

a) The instructions shall be either indelibly printed on the warning device or attached in such a manner that they cannot be easily removed.

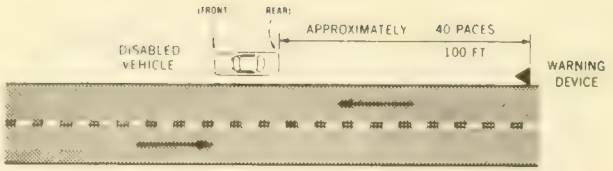
(b) Instructions for each warning device shall include a recommendation that the driver activate the vehicular hazard warning signal lamps before leaving the vehicle to erect the warning device.

(c) Instructions shall include the illustration depicted in Figure 3 indicating recommended positioning.



REFLECTIVITY TEST DIAGRAM

Figure 2



RECOMMENDED WARNING DEVICE POSITIONING

Figure 3

S5.2 Configuration

S5.2.1 When the warning device is erected on level ground:

(a) Part of the warning device shall form an equilateral triangle that stands in a plane not more than 10° from the vertical, with the lower edge of the base of the triangle horizontal and not less than 1 inch above the ground.

(b) None of the required portion of the reflective material and fluorescent material shall be obscured by any other part of the warning device except for any portion of the material over which it is necessary to provide fasteners, pivoting beads or other means to allow collapsibility or support of the device. In any event, sufficient reflective and fluorescent material shall be used on the triangle to meet the requirements of S5.4 and S5.5.

S5.2.2 Each of the three sides of the triangular portion of the warning device shall not be less than 17 and not more than 22 inches long, and not less than 2 and not more than 3 inches wide (Figure 1).

S5.2.3 Each face of the triangular portion of the warning device shall have an outer border of red reflex reflective material of uniform width and not less than 0.75 and not more than 1.75 inches wide, and an inner border of orange fluorescent material of uniform width and not less than 1.25 and not more than 1.30 inches wide (Figure 1). However, this requirement shall not apply if the dual purpose material is used.

S5.2.4 Each vertex of the triangular portion of the warning device shall have a radius of not less than 0.25 inch and not more than 0.50 inch.

S5.2.5 All edges shall be rounded or chamfered, as necessary to reduce the possibility of cutting or harm to the user.

S5.2.6 The device shall consist entirely of the triangular portion and attachments necessary for its support and enclosure, without additional visible shapes of attachments.

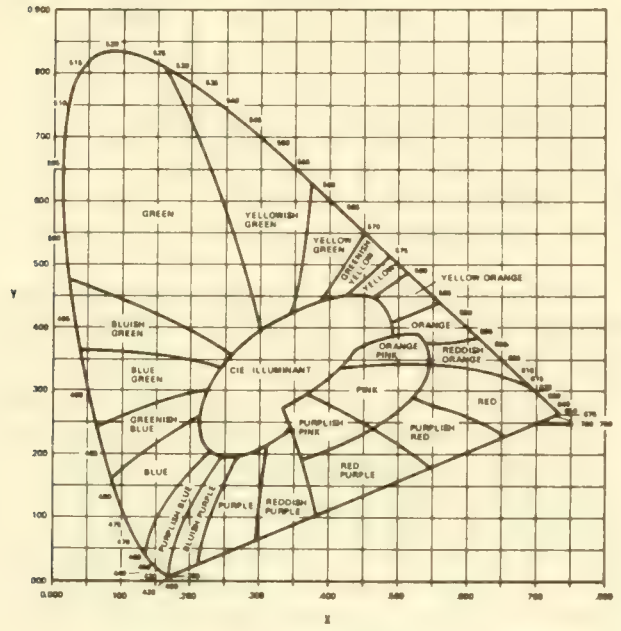


Figure 4 - CIE Chromaticity Diagram

S5.3 Color.

S5.3.1 The color of the red reflex reflective material on the warning device shall have the following characteristics, both before and after the warning device has been conditioned in accordance with S6.1, when the source of illumination is a lamp with a tungsten filament operating at 2856° Kelvin color temperature. Expressed in terms of the International Commission on Illumination (CIE) 1931 standard colorimetric observer system (CIE chromaticity diagram, Figure 4), the chromaticity coordinates of the red reflex reflective material shall lie within the region bounded by the spectrum locus and the lines on the diagram defined by the following equations:

Boundary	*Equations*
Yellow	$y = 0.33$
White	$x + y = 0.98$

S5.3.2 The color of the orange fluorescent material on the warning device shall have the following characteristics, both before and after the warning device has been conditioned in accordance with S6.1, when the source of illumination is a 150-watt high pressure xenon compact arc lamp. Expressed in terms of the International Commission on Illumination (CIE) 1931 standard colorimetric observer system, the chromaticity coordinates of the orange fluorescent material shall lie within the region bounded by the spectrum locus and the lines on the diagram defined by the following equations:

Boundary	*Equation*
Yellow	$y = 0.49x + 0.17$
White	$x + y = 0.93$
Red	$y = 0.35$

The 150-watt high pressure xenon compact arc lamp shall illuminate the sample using the unmodified spectrum at an angle of incidence of 45° and an angle of observation of 90°. If dual purpose material is being tested, it shall be illuminated by a 150-watt high pressure xenon compact arc lamp, whose light is diffused by an integrating sphere.

S5.4 Reflectivity. When the red reflex reflective material on the warning device is tested in accordance with S6.2, both before and after the warning device has been conditioned in accordance with S6.1, its total candlepower per incident foot candle shall be not less than the values specified in Table I for each of the listed entrance angles.

S5.5 Luminance. When the orange fluorescent material on the warning device is tested in accordance with S6.3, both before and after the warning device has been conditioned in accordance with S6.1, it shall have a minimum relative luminance of 25 percent of a flat magnesium oxide surface and a minimum product of that relative luminance and width in inches of 44.

S5.6 Stability. When the warning device is erected on a horizontal brushed concrete surface both with and against the brush marks and subjected to a horizontal wind of 40 miles per hour in any direction for 3 minutes—

(a) No part of it shall slide more than 3 inches from its initial position;

(b) Its triangular potion shall not tilt to a position that is more than 10° from the vertical; and

(c) Its triangular position shall not turn through a horizontal angle of more than 10° in either direction from the initial position.

TABLE 1. Total Minimum Candlepower Per Incident Foot Candle

Observation Angles-Degrees	Entrance Angles – Degrees						
	0	10 up	10 down	20 left	20 right	30 left	30 right
0.2	80	80	80	40	40	8.0	8.0
1.5	0.8	0.8	0.8	0.4	0.4	0.08	0.08

S5.7 Durability. When the warning device is conditioned in accordance with S6.1, no part of the warning device shall become warped or separated from the rest of the warning device.

S6. Test Procedures.

S6.1 Conditions.

S6.1.1 Submit the warning device to the following conditioning sequence, returning the device after each step in the sequence to ambient air at 68° F. for at least 2 hours.

(a) Minus 40° F. for 16 hours in a circulating air chamber using ambient air which would have not less than 30 percent and not more than 70 percent relative humidity at 70° F.;

(b) 150° F. for 16 hours in a circulating air oven using ambient air which would have not less than 30 percent and not more than 70 percent relative humidity at 70° F.;

(c) 100° F. and 90 percent relative humidity for 16 hours;

(d) Salt spray (fog) test in accordance with American Society of Testing and Materials Standard B–117, Standard Method of Salt Spray (fog) testing, August 1964, except that the test shall be for 4 hours rather than 40 hours; and

(e) Immersion for 2 hours in water at a temperature of 100° F.

S6.2 Reflectivity Test. Test the red reflex reflective material as follows:

(a) Unless dual purpose material is used, prevent the orange fluorescent material from affecting the photometric measurement of the reflectivity of the red reflex reflective material, either by separation or masking.

(b) Use a lamp with a tungsten filament operating at 2856° Kelvin color temperature as the source of illumination.

(c) Place the source of illumination 100 feet from the red reflex reflective material (Figure 2).

(d) Place the observation point directly above the source of illumination (Figure 2).

(e) Calculate the total candlepower per incident foot candle of the red reflex reflective material at each of the entrance and observation angles specified in Table 1.

S6.3 Luminance Test. Test the orange fluorescent material as follows:

(a) Unless dual purpose material is used, prevent the red reflex reflective material from affecting the photometric measurement of the luminance of the orange fluorescent material.

(b) Using a 150-watt high pressure xenon compact arc lamp as the light source, illuminate the test sample at an angle of incidence of 45° and an angle of observation of 90°. If dual purpose material is being tested, illuminate the sample diffusely through an integrating sphere.

(c) Measure the luminance of the material at a perpendicular viewing angle, with no ray of the viewing beam more than 5° from the perpendicular to the specimen.

(d) Repeat the procedure for a flat magnesium oxide surface, and compute the quotient (percentage) of the luminance of the material relative to that of the magnesium oxide surface.

37 F.R. 5038
March 9, 1972

PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 126

Truck-Camper Loading

(Docket No. 71–7; Notice 2)

This notice amends Part 571 of Title 49, Code of Federal Regulations, to add a new Motor Vehicle Safety Standard No. 126 (49 CFR 571.126) that requires manufacturers of slide-in campers and of trucks that would accommodate them to provide information concerning proper loading and load distribution. A notice of proposed rulemaking on this subject was published on April 9, 1971 (36 F.R. 6837).

The purpose of the new standard is to provide information that can be used to reduce overloading and improper load distribution in truck-camper combinations, and to prevent accidents resulting from the adverse effects of these conditions on vehicle handling and braking. Standard No. 126 requires manufacturers of slide-in campers to permanently affix a label to a rear surface of each camper that includes the weight of the camper when it contains standard equipment, and water, bottled gas, and ice box with ice or refrigerator. The camper manufacturer is also required to provide, in an owner's manual or other document delivered with the camper, a picture showing the location of the longitudinal center of gravity of the camper when loaded and a picture showing a proper match of the slide-in camper on a typical truck. Standard No. 126 also requires manufacturers of trucks to which a camper could be attached to provide, in an operator's manual or other document delivered with the truck, a picture showing the manufacturer's recommended longitudinal center of gravity zone for the cargo weight rating, and one depicting the proper match of a truck and slide-in camper.

Standard No. 126 differs from the proposal in several aspects. The standard as proposed would have applied to incomplete vehicles intended for completion as trucks, and to multipurpose passenger vehicles with a GVWR of 10,000 pounds or less. These categories have been excluded from the final rule, which applies to trucks that would accommodate slide-in campers. These generally are pick-up trucks. In excluding other proposed categories the NHTSA considers that the information the manufacturer of an incomplete vehicle must furnish pursuant to 49 CFR Part 568, *Vehicles Manufactured in Two or More Stages*, should be sufficient to assist a final assembler in permanently installing a chassis-mount camper on a truck chassis, or in assembling a vehicle such as a motor home.

The proposal would also have required that a label be permanently affixed to each cargo compartment that would specify the maximum recommended weight for a load placed in the compartment. Commenters argued persuasively that camper owners would disregard a series of weight capacity labels on all storage compartments, and the proposal was not adopted. The final rule requires the certification label and the owner's manual to provide a figure denoting camper weight, which as noted previously includes the weight of standard equipment, a refrigerator, or ice box with ice, and maximum capacity of water and bottled gas. The cubic capacity of the refrigerator or weight of ice, the weight of bottled gas, and the gallons of water encompassed in the maximum weight figure will also be listed on the permanent label and in the owner's manual. The camper manufacturer may exclude any of these items from the label if the camper is not designed to accommodate them, provided that a notation to that effect appears in the owner's manual. The standard also requires a manufacturer to provide a listing of optional or additional equipment that the camper is designed to carry, and the respective weight of each if the unit weight exceeds 20 pounds.

The label will also state the month and year of manufacture, and a recommendation that the user consult the owner's manual or data sheet for the weight of optional and additional equipment. The label is to be mounted in a plainly visible location on a surface at the rear of the camper other than the roof, steps or bumper extension.

The proposed reference point, or the distances of the camper center of gravity from the reference point, have not been adopted for use on the exterior label. Manufacturers of campers generally have had no experience with the relatively complex vertical center of gravity measurement techniques. Truck manufacturers pointed out a number of variables that would have to be considered, and stated that the limiting envelope would not be rectangular as implied by the proposal. Other comments objected to the end of the truck's axle shaft as a reference point for specifying a recommended cargo center of gravity zone. Variations in the longitudinal center of gravity of the load are, however, known to have a direct relationship to a truck's gross axle loading, and can adversely affect the steering and stopping ability of the vehicle. The camper manufacturer will therefore be required to provide in the owner's manual a picture showing the location of the camper's longitudinal center of gravity within 2 inches, under specified load conditions. A manufacturer can easily measure the longitudinal center of gravity of a slide-in camper by balancing it on a transverse horizontal rod. The camper owner's manual must also contain specific advice on proper choice of truck to which a camper may be mounted, and proper loading of the camper once it is attached. Truck manufacturers in turn are required to include in the operator's manual a picture showing the recommended longitudinal center of gravity zone for the cargo weight rating and loading recommendations.

In order to allow the relatively small camper manufacturers time to consider the recommendations of truck manufacturers, and to modify camper designs if needed, a camper manufacturer need not provide center of gravity location information until July 1, 1973.

Effective date: January 1, 1973, with additional requirements effective July 1, 1973. Because compliance with the rule does not involve extensive leadtime, the Administrator finds for good cause shown that an effective date earlier than one hundred eighty days after issuance is in the public interest.

In consideration of the foregoing, 49 CFR Part 571 is amended by adding § 571.126, Standard No. 126, *Truck-Camper Loading*. . . .

This notice is issued under the authority of Sections 103, 112, 114, and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1401, 1403, and 1407) and the delegation of authority from the Secretary of Transportation to the National Highway Traffic Safety Administrator, 49 CFR 1.51.

Issued on August 3, 1972.

Douglas W. Toms
Administrator

37 F.R. 16497
August 15, 1972

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 126

Truck-Camper Loading

(Docket No. 71–7; Notice 4)

This notice responds to petitions for reconsideration of 49 CFR § 571.126, Motor Vehicle Safety Standard No. 126, *Truck-Camper Loading*. The portion of the regulation requiring information to be provided by camper manufacturers is retained as a Federal motor vehicle safety standard, and a vehicle information number is added to the list of information to be provided. The portion of the rule applicable to truck manufacturers is reissued as a consumer information regulation by a separate notice (37 F.R. 26607).

Standard No. 126, establishing requirements for slide-in campers and trucks that would accommodate them, was published on August 15, 1972 (37 F.R. 16497). Thereafter, pursuant to 49 CFR § 553.35, petitions for reconsideration of the standard were filed by Chrysler Corporation (Chrysler), Ford Motor Company (Ford), General Motors Corporation (GM), Jeep Corporation (Jeep), Motor Vehicle Manufacturers Association of the United States, Inc. (MVMA), Recreational Vehicle Institute, Inc. (RVI), and Toyota Motor Sales, U.S.A., Inc. (Toyota).

In response to information contained in several of these petitions the standard is being amended in certain respects. The Administrator has declined to grant requested relief from other requirements of the standard.

1. *Statutory Authority.* Standard No. 126 as issued applied to slide-in campers and to trucks that would accommodate them. It required manufacturers of slide-in campers to attach to their products a label containing the name of the manufacturer, the month and year of manufacture, a certification of conformity, and information concerning the camper's maximum weight. The standard also required camper manufacturers to provide the same information and certain additional items in a manual or other document to accompany each camper. A parallel requirement was adopted applicable to truck manufacturers; they were required to provide information in a manual or other document supplied with their products that would assist truck owners in choosing a properly matched camper.

Chrysler, Ford, GM, Jeep, and MVMA questioned the authority to issue the requirements of 49 CFR § 571.126 as a Federal motor vehicle safety standard rather than in the form of a Consumer Information Regulation (49 CFR Part 575), alleging that Standard No. 126 is "neither a performance standard nor does it provide any objective criteria for determining compliance."

The NHTSA does not agree that it lacks authority to issue Standard No. 126 in the form in which it appeared. Actually, the regulation was issued under the combined authority of four sections of the Act: section 103 (the authority for the Federal motor vehicle safety standards), section 112 (the primary authority for technical information and data to be provided by a manufacturer to NHTSA and the consumer), section 114 (the authority for vehicle and equipment certification) and section 119 (the general rulemaking authority). Many of the existing standards contain information requirements, and it is the position of this agency that such provisions fully satisfy the statutory criteria as objective performance requirements. The question therefore is in most respects the merely formal one of whether the rule is called a "safety standard" or a "consumer information regulation," and codified accordingly.

On reconsideration of all aspects of the standard, however, this agency has determined that there is an advantage to issuing the requirements for trucks in the form of a consumer information regulation. 49 CFR § 575.6(b) requires all Part 575 consumer information to be made available to prospective purchasers in dealer showrooms, and paragraph (c) of that section requires such information to be furnished directly to the NHTSA. Neither of these requirements applies to information furnished pursuant to Part 571 safety standards. Part 575 consumer information regulations are enforceable in substantially the same manner and with the same sanctions as safety standards. The requirements for trucks in 49 CFR § 571.126 are therefore reissued as a new consumer information regulation, 49 CFR § 575.103, by an action published in this issue, 37 F.R. 26607.

2. *Effective date.* The requirement for pictures showing camper center of gravity and proper truck-camper match that camper manufacturers were to provide as of July 1, 1973, is being deferred 2 months, and will not be required until September 1, 1973. RVI has petitioned for an extension of the effective date of these requirements to January 1, 1974, on the basis that the extension "would give the relatively small camper manufacturers additional time to conform camper design to the center of gravity envelopes developed by the truck manufacturers." The regulation, however, only requires manufacturers to provide information, not to redesign their products. The NHTSA finds that RVI has shown insufficient justification to support its request, and the petition is denied.

3. *Definitions.* RVI petitioned that its definition of "camper" be adopted so that there would be no confusion within the recreational vehicle industry as to whether the standard applied to motor homes and pickup covers. RVI's petition was similar to the one it submitted for reconsideration of Standard No. 205, *Glazing Materials.* The NHTSA has not adopted the RVI definition, but it has defined the terms "camper" and "slide-in camper" so as to clarify these terms and differentiate them from "motor home" and "pickup cover," also defined in Standard No. 205. "Cargo weight rating" was defined as "the maximum weight of cargo . . . that can safely be carried by a vehicle under normal operating conditions. . . ." Ford objects that the definition is subjective and urges that the term be redefined as "the maximum weight of cargo . . . that the truck manufacturer specifies may be carried on the vehicle." The NHTSA concurs generally with Ford's views. The definition has been rewritten to make clear that the rating, like GVWR and GAWR, is to be assigned at the discretion of the manufacturer.

4. *Information.* Ford believes the reference to "total load" in paragraph S5.1.2(c) is misleading "in that users may easily understand this to be the total load on the truck." It suggests substitution of the term "cargo load." Ford's point is well made, and the term is redesignated "total cargo load" as a clarification.

Toyota has asked that paragraph S5.1.2(e) be amended to substitute four inches for the requirement that camper manufacturers provide a picture showing the location of the center of gravity of the camper within an accuracy of two inches under the loaded condition. The petition is denied. The intent of the specification is to insure an accuracy within two inches, in either direction, in effect, a range of four inches. The NHTSA does not consider this tolerance to be overly demanding.

Finally, RVI states that its members have had difficulty in interpreting Figure 2 and requests the NHTSA to more clearly indicate "that the terminology 'Mount at Aft End of Truck Cargo Area' means that the designated point in the figure signifies the point where the identified surface of the camper abuts the rearmost edge or surface of the cargo area of the truck, presumably the tailgate in most configurations." To clarify its intent the NHTSA is changing the language in question to "point that contacts rear end of truck bed."

5. *Vehicle Identification Number (VIN.)* The NHTSA proposed on August 15, 1972 (Docket No. 71-7; Notice 3, F.R. 16505) that slide-in campers be identified by a VIN, consisting of arabic numerals, roman letters, or both. The notice also proposed to require that the VIN of two campers manufactured by a manufacturer within a ten year period shall not be identical. No objections were raised to the proposal, and Standard No. 126 is amended to adopt the pro-

posed requirements, reworded slightly effective January 1, 1973.

In consideration of the foregoing, 49 CFR § 571.126, Motor Vehicle Safety Standard No. 126, is amended. . . .

Effective date: January 1, 1973, with additional requirements effective September 1, 1973. Because the amendment consists principally of the reissue of existing requirements, and compliance with the amendment requiring a VIN does not involve extensive leadtime, the Administrator finds for good cause shown that an effective date eariler than 180 days after issuance is in the public interest.

This notice is issued under the authority of sections 103, 112, 114, and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1401, 1403, and 1407) and the delegation of authority from the Secretary of Transportation to the National Highway Traffic Safety Administrator, 49 CFR 1.51.

Issued on: December 6, 1972.

Douglas W. Toms
Administrator

37 F.R. 26605
December 14, 1972

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 126

Truck-Camper Loading

(Docket No. 71–7; Notice 7)

This notice responds to a petition for reconsideration of 49 CFR § 571.126, Motor Vehicle Safety Standard No. 126, *Truck-camper loading*, with an amendment allowing optional wording of a portion of the placard to be affixed to campers, and of other required information. The amendments are effective upon publication in the *Federal Register*.

On August 15, 1972 Motor Vehicle Safety Standard No. 126 was originally published (37 F.R. 16497). In response to petitions for reconsideration the standard was republished on December 14, 1972 (37 F.R. 26605) with amendments that included minor changes in the text of information required to be furnished to purchasers of slide-in campers.

Paragraph S5.1.2(a) of Standard No. 126 requires each manufacturer of a slide-in camper to provide in a manual or other document delivered with each camper "the statement and information provided on the certification label as specified in paragraph S5.1.1". Among this information is the month and year that the camper was manufactured. The Trailer Coach Association has asked in a letter dated December 29, 1972 that wording such as "see certification label for date of manufacture" be substituted for the month and year of manufacture, contending that "to require manufacturers to list the month and year of manufacture in each vehicle owner's manual would be an unnecessary hardship in view of the production and shipping schedule which varies greatly from time to time during the year."

The NHTSA believes that the request of TCA is reasonable, and is treating TCA's letter as a petition for reconsideration filed pursuant to 49 CFR 553.35. However, since the information requirement became effective January 1, 1973, and because of the possibility that manufacturers now providing this data may wish to continue to do so, the manufacturer should have the option of including either the month and year of manufacture or a reference to the certification label. The standard is being amended to provide this option.

In the amendments published on December 14, 1972 two minor changes were made in terminology. In Paragraph S5.1.2(c) the phrase "total load", which appears twice, was changed to "total cargo load" as a clarification. Further clarification was provided in an amendment to Figure 2, Camper Center of Gravity Information where the legend "Mount at Aft End of Truck Cargo Area" was changed to "Point That Contacts Rear End of Truck Bed". In view of the amendments to § 575.103 delaying the effective date 30 days until April 1, 1973, and permitting use of the earlier form until October 1, 1973 (Docket No. 71–7; Notice 6 (38 F.R. 4400)), camper manufacturers who have printed manuals with the old terminology should be afforded the same opportunity as truck manufacturers to exhaust obsolete stocks of materials. Appropriate amendments are therefore made to Standard No. 126, including a 30 day delay in the pictorial information that was to have been provided as of September 1, 1973.

In consideration of the foregoing 49 CFR § 571.126 Motor Vehicle Safety Standard No. 126 is amended . . . .

Effective date: February 14, 1973. Because the amendments create no additional burden it is found for good cause that an effective date earlier than one hundred eighty days after issuance is in the public interest.

(Sec. 103, 112, 114, and 119, Pub. L. 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1403 and 1407; delegation of authority at 49 CFR 1.51.)

Issued on February 12, 1973.

Douglas W. Toms
Administrator

38 F.R. 4399
February 14, 1973

PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 126

Truck-Camper Loading

(Docket No. 71–7; Notice 8)

This notice corrects the amendment to 49 CFR § 571.126, Standard No. 126, *Truck-camper loading*, published on February 14, 1973 (38 F.R. 4399). The amendment to paragraph S5.1.2(a) erroneously referred to "the information required by subparagraphs (c) and (d) of paragraph S5.1.1". The reference should have been to "subparagraphs (b) and (c)".

Additionally, the opening statement of the preamble erroneously stated that the amendment allowed "optional wording of a portion of the placard to be affixed to campers, and of other required information". The amendment itself correctly allowed optional wording of information provided in the manual or other document delivered with the camper, not on the placard.

Effective date: March 9, 1973. Because the amendment corrects an error, it is found for good cause shown that an immediate effective date is in the public interest.

(Sec. 103, 112, 114 and 119, Pub. L. 89–563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1403, and 1407; delegation of authority at 49 CFR 1.51.)

Issued on March 5, 1973.

Douglas W. Toms
Administrator

38 F.R. 6392
March 9, 1973

PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 126

Truck-Camper Loading

(Docket No. 71–7; Notice 10)

This notice amends Standard No. 126, *Truck-Camper Loading*, by removing the requirement that a camper's vehicle identification number (VIN) be printed in its owner's manual. Such a modification will reduce the cost of compliance with the standard, without adversely affecting the level of safety prescribed.

Effective Date: April 27, 1978.

For Further Information Contact:

Kevin Cavey, Crash Avoidance Division, Office of Vehicle Safety Standards, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590 (202–426–2716).

Supplementary Information: On November 29, 1973, the NHTSA issued a notice proposing to amend Standard No. 126, *Truck-Camper Loading*, to remove the requirement that the vehicle identification number (VIN) of each camper be printed in its owner's manual (38 FR 32945). The amendment, requested by the Recreation Vehicle Industry Association, was proposed to reduce the burdens and costs associated with compliance with the requirement.

Comments were received from Ford, the Recreation Vehicle Industry Association, and the Recreational Vehicle Division of the Trailer Coach Association. The Vehicle Equipment Safety Commission did not submit comments.

The three comments received supported the suggested modification. Some commenters asserted that the requirement added little to vehicle safety while resulting in increased costs and the increased possibility of errors associated with inserting the incorrect VIN in an owner's manual. The NHTSA concurs with the commenters and concludes that the intent of the requirement can be achieved by permitting a manufacturer to state in the owner's manual that the VIN can be found by referring to the camper's certification label. Accordingly, Standard No. 126 is amended to make optional the provision of the VIN in a camper's owner's manual. If the VIN is not placed in the owner's manual, a reference must be made in the manual to the location of the VIN on the certification label.

In consideration of the foregoing, the second sentence of paragraph S5.1.2 of Standard No. 126, 49 CFR Part 571.126 is amended. . . .

Since this amendment relieves a restriction and imposes additional burden on any person, it is found for good cause shown that an immediate effective date is in the public interest.

The principal authors of this notice are Kevin Cavey of the Office of Vehicle Safety Standards and Roger Tilton of the Office of Chief Counsel.

(Secs. 103, 119, Pub. L. 89–563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.50.)

Issued on April 21, 1978.

Joan Claybrook
Administrator

43 F.R. 17946
April 27, 1978

MOTOR VEHICLE SAFETY STANDARD NO. 126

Truck-Camper Loading

(Docket No. 71-7; Notice 2)

S1. Scope. This standard requires manufacturers of slide-in campers to affix a label to each camper that contains information relating to certification, identification, and proper loading, and to provide more detailed loading information in the owner's manual.

S2. Purpose. The purpose of this standard is to provide information that can be used to reduce overloading and improper load placement in truck-camper combinations, and unsafe truck-camper matching, in order to prevent accidents resulting from the adverse effects of these conditions on vehicle steering and braking.

S3. Application. This standard applies to slide-in campers.

S4. Definitions.

"Camper" means a structure designed to be mounted in the cargo area of a truck, or attached to an incomplete vehicle with motive power, for the purpose of providing shelter for persons.

"Cargo weight rating" means the value specified by the manufacturer as the cargo-carrying capacity, in pounds, of a vehicle, exclusive of the weight of occupants in designated seating positions.

"Slide-in camper" means a camper having a roof, floor and sides, designed to be mounted on and removable from the cargo area of a truck by the user.

S5. Requirements.

S5.1 Slide-in camper.

S5.1.1 Labels. Each slide-in camper shall have permanently affixed to it, in a manner that it cannot be removed without defacing or destroying it, in a plainly visible location on an exterior rear surface other than the roof, steps, or bumper extension, a label containing the following information in the English language lettered in block capitals and numerals not less than $\frac{3}{32}$-inch high, of a color contrasting with the background, in the order shown below and in the form illustrated in Figure 1.

MFG. BY: (CAMPER MANUFACTURER'S NAME)
(MONTH AND YEAR OF MANUFACTURE)
THIS CAMPER CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.
CAMPER WEIGHT IS _____ LBS. MAXIMUM WHEN IT CONTAINS STANDARD EQUIPMENT, _____ GAL. OF WATER, _____ LBS. OF BOTTLED GAS, AND _____ CUBIC FT. REFRIGERATOR (or ICE BOX WITH _____ LBS. OF ICE, as applicable).
CONSULT OWNER'S MANUAL (or DATA SHEET as applicable) FOR WEIGHTS OF ADDITIONAL OR OPTIONAL EQUIPMENT.
(VEHICLE IDENTIFICATION NUMBER)

FIGURE 1. Label for Campers

(a) Name of camper manufacturer. The full corporate or individual name of the actual assembler of the camper shall be spelled out, except that such abbreviations as "Co.," or "Inc.," and their foreign equivalents, and the first and middle initials of individuals may be used. The name of the manufacturer shall be preceded by the words "Manufactured By" or "Mfd. By".

(b) Month and year of manufacture. It may be spelled out (*e.g.*, "June 1973"), or expressed in numerals (*e.g.*, "6/73).

(c) The statement: "This camper conforms to all applicable Federal Motor Vehicle Safety

Standards in effect on the date of manufacture shown above." The expression "U.S." or "U.S.A." may be inserted before the word "Federal."

(d) The following statement completed as appropriate: "CAMPER WEIGHT IS _____ LBS. MAXIMUM WHEN IT CONTAINS STANDARD EQUIPMENT, _____ GAL. OF WATER, _____ LBS. OF BOTTLED GAS, AND _____ CUBIC FT. REFRIGERATOR (or ICE BOX WITH _____ LBS. OF ICE, as applicable). CONSULT OWNER'S MANUAL (or DATA SHEET as applicable) FOR WEIGHTS OF ADDITIONAL OR OPTIONAL EQUIPMENT."

"Gal. of water" refers to the volume of water necessary to fill the camper's fresh water tanks to capacity. "Lbs. of bottled gas" refers to the weight of gas necessary to fill the camper's bottled gas tanks to capacity. The statement regarding a "Refrigerator" or "Icebox" refers to the capacity of the refrigerator with which the vehicle is equipped or the weight of the ice with which the icebox may be filled. Any of these items may be omitted from the statement, if the corresponding accessories are not included with the camper, provided that the omission is noted in the camper owner's manual as required in paragraph S5.1.2(a).

(e) Vehicle Identification Number. Each slide-in camper shall have a number assigned by its manufacturer for identification purposes consisting of arabic numerals, roman letters, or both. No two slide-in campers manufactured by the same manufacturer within any 10-year period shall have the same Vehicle Identification Number.

S5.1.2 Owner's manual. Each slide-in camper manufacturer shall provide with each camper a manual or other document containing the information specified in S5.1.2(a) through S5.1.2(d). The information in S5.1.2(e) and S5.1.2(f) shall also be provided with each camper manufactured on or after October 1, 1973.

(a) The statement and information provided on the certification label as specified in paragraph S5.1.1. Instead of the information required by subparagraphs (b), (c), and (e) of paragraph S5.1.1, a manufacturer may use the statements, "See camper certification label (located on camper's rear exterior surface) for month and year of manufacture and for the Vehicle Identification Number" and "This camper conforms to all applicable Federal Motor Vehicle Safety Standards in effect on the date of manufacture."

(b) A list of other additional or optional equipment that the camper is designed to carry, and the maximum weight of each if its weight is more than 20 lbs. when installed.

(c) The statement: "To estimate the total cargo load that will be placed on a truck, add the weight of all passengers in the camper, the weight of supplies, tools, and all other cargo, the weight of installed additional or optional camper equipment, and the manufacturer's camper weight figure. Select a truck that has a cargo weight rating that is equal to or greater than the total cargo load of the camper, and whose manufacturer recommends a cargo center of gravity zone that will contain the camper's center of gravity when it is installed." Until October 1, 1973, the phrase "total load" may be used instead of "total cargo load."

(d) The statements: "When loading this camper store heavy gear first, keeping it on or close to the camper floor. Place heavy things far enough forward to keep the loaded camper's center of gravity within the zone recommended by the truck manufacturer. Store only light objects on high shelves. Distribute weight to obtain even side-to-side balance of the loaded vehicle. Secure loose items to prevent weight shifts that could affect the balance of your vehicle. When the truck-camper is loaded, drive to a scale and weigh on the front and on the rear wheels separately to determine axle loads. The load on an axle should not exceed its gross axle weight rating (GAWR). The total of the axle loads should not exceed the gross vehicle weight rating (GVWR). These weight ratings are given on the vehicle certification label that is located on the left side of the vehicle, normally the dash panel, hinge pillar, door latch post, or door edge next to the driver on trucks manu-

factured on or after January 1, 1972. If weight ratings are exceeded, move or remove items to bring all weights below the ratings."

(e) A picture showing the location of the longitudinal center of gravity of the camper within an accuracy of 2 inches under the loaded condition specified in paragraph S5.1.1(d), in the manner illustrated in Figure 2. Until October 1, 1973 the phrase "Mount at Aft End of Truck Cargo Area" may be used in Figure 2 instead of "Point That Contacts Rear End of Truck Bed"

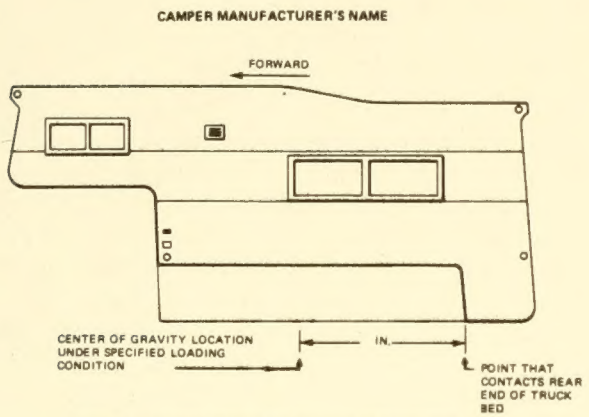


FIGURE 2 - CAMPER CENTER OF GRAVITY INFORMATION

(f) A picture showing the proper match of a truck and slide-in camper in the form illustrated in Figure 3.

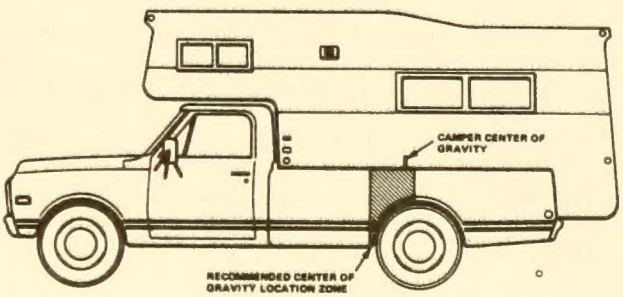


FIGURE 3 - EXAMPLE OF PROPER TRUCK AND CAMPER MATCH

37 F.R. 16497
August 15, 1972



BOSTON PUBLIC LIBRARY
3 9999 06313 251 6